11-5895-469-12

TM 11-5895-469-12

TECHNICAL MANUAL

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL
FLIGHT COORDINATION CENTRAL AN/TSC-61B (NSN 5895-01-057-3968)

This copy is a reprint which includes current pages from Changes 1 through 2

HEADQUARTERS, DEPARTMENT OF THE ARMY

AUGUST 1979

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WARNINGS

HIGH VOLTAGE

In excess of 120/208 volts ac are used in this equipment. Be careful when working on the ac line connections. Serious Injury or DEATH may result from contact with these terminals.

DON'T TAKE CHANCES!

VENTILATION IS ESSENTIAL

To prevent asphyxiation, the shelter must be ventilated at all times when occupied.

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

CLEANING WITH COMPRESSED AIR

To be usable for cleaning, the compressed air source must limit nozzle pressure to no more than 29 pounds per square inch gauge (PSIG). Goggles must be worn at all times while using compressed air.

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OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL
FLIGHT COORDINATION CENTRAL AN/TSC-61B (NSN 5895-01-057-3968)

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Operator's and Organizational Maintenance Manual
FLIGHT COORDINATION CENTRAL
AN/TSC-61B
(NSN 5895-01-057-3968

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TECHNICAL MANUAL
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HEADQUARTERS
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OPERATOR'S AND ORGANIZATIONAL MAINTENANCE MANUAL FLIGHT COORDINATION CENTRAL AN/TSC-61B (NSN 5895-01-057-3968)

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007.

In either case, a reply will be furnished direct to you.

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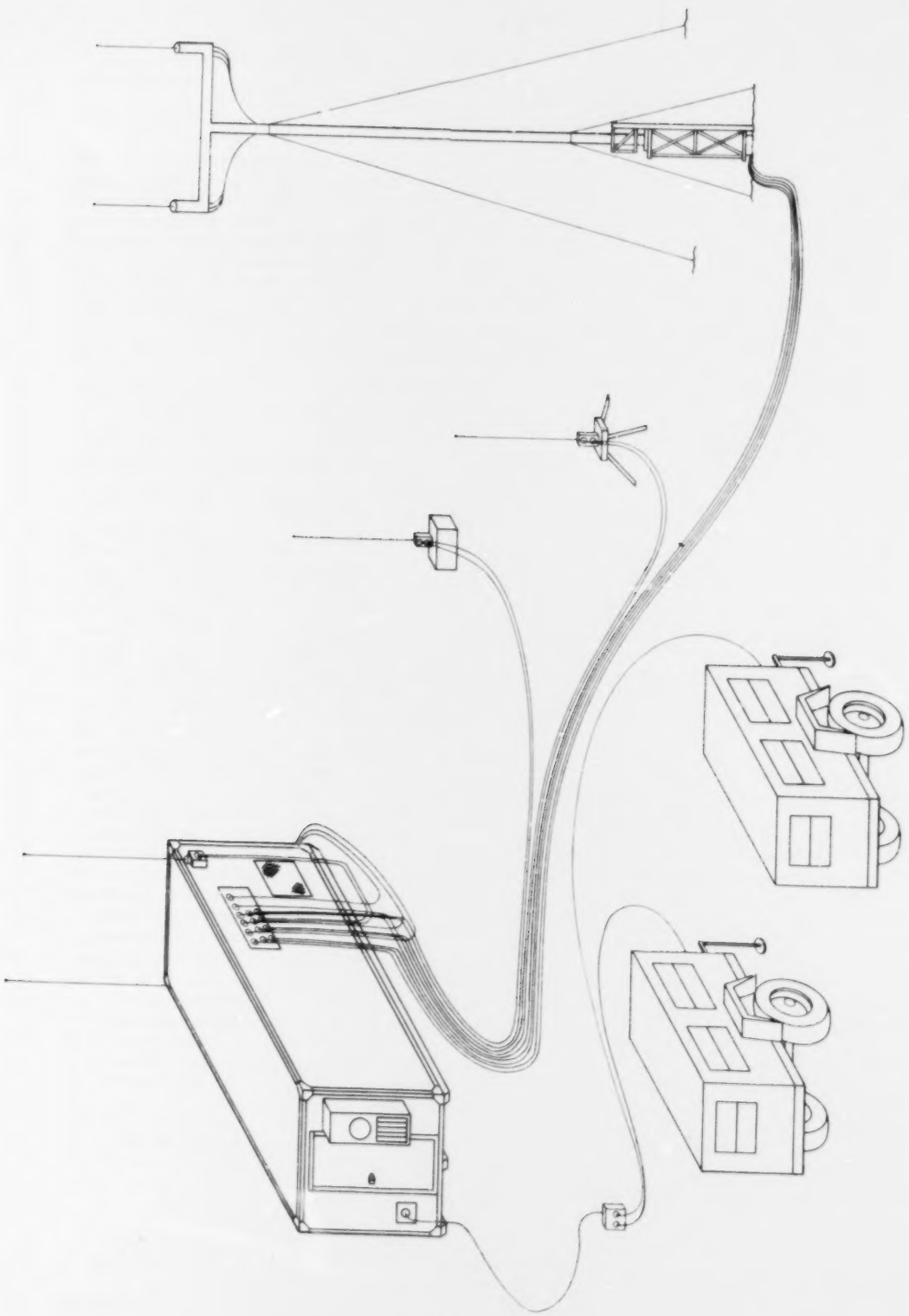

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Figure 1-1. Flight Coordination Central AN/TSC-61B.

CHAPTER 1
INTRODUCTION

Section I. GENERAL

1-1. Scope

a. This manual covers Flight Coordination Central AN/TSC-61B (FCC) (fig. 1-1). It provides instructions for installation, operation, and maintenance for operator and organizational repair personnel.

b. Many of the equipments installed within the FCC are covered by separate operator and maintenance manuals. Appendix A lists reference publications needed for operation and maintenance of the FCC.

1-2. Consolidated Index of Army Publications and Blank Forms

Refer to the latest issue of DA Pam 310-1 to determine whether there are new editions, changes or additional publications pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports

a. Reports of Maintenance and Unsatisfactory Equipment. Department of the Army forms and procedures used for equipment maintenance will be those described by DA Pam 738-750, The Army Maintenance Management System (TAMMS).

b. Report of Packaging and Handling Deficiencies. Fill out and forward SF 364 (Report of Discrepancy (ROD)) as prescribed in AR 735-11-2.

c. Discrepancy in Shipment Report (DISREP) (SF 361). Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in AR 55-38.

1-4. Reporting Equipment Improvement Recommendations (EIR)

If your Flight Coordination Central needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: AMSEL-ME-MP, Fort Monmouth, New Jersey 07703-5007. We'll send you a reply.

1-5. Administrative Storage

a. Administrative storage of equipment issued to and used by Army activities will have preventive maintenance performed in accordance with the PMCS charts before storing. When removing the equipment from administrative storage, the PMCS should be performed to assure operational readiness. Disassembly and repacking equipment for shipment or limited storage is covered in SB 38-100.

b. COMSEC equipment must be removed before storage, and turned in to the COMSEC account custodian.

1-6. Destruction of Army Electronics Materiel

Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2. COMSEC equipment and keying information have first priority. In addition to the above listed procedure, refer to KAO-133 ( )/TSEC for additional information on the TSEC/KY-8.

1-7. Nomenclature and Common Names

A list of the nomenclature and common name assignments for components of Flight Coordination Central AN/TSC-61B is given below.

Nomenclature	*Common name*
Amplifier-Filter AM-6985/TS	Amplifier-filter
Antenna AS-1729/VRC	FM antenna
Matching Unit, Base, Antenna MX-5707/VRC	FM antenna matching unit
Antenna AT-1011/U	HF antenna
Base, Support, Antenna AB-720/G	Antenna support
Antenna AS-3243/GRC	UVU antenna
Antenna AS-3244/TS	VUV antenna
Antenna Coupler CU-1658A/A	HF antenna coupler
Case, Coupler CY-7658/GRC	HF coupler case
Control, Indicator C-8156/ARC	KY-8 control
Control, Intercommunication Set C-1611D/AIC	Secure control
Control, Power Supply C-10419/TSC-61B	DC power supply control
Control, Radio Set C-3940/ARC-94	HF control
Signal Control Box	Audio coupler
Element, Antenna AT-1039/U	Antenna element
Element, Antenna AT-1040/U	Antenna element
Element, Antenna AT-1041/U	Antenna element
Element, Antenna AT-1042/U	Antenna element
Element, Antenna AT-1043/U	Antenna element
Filter, Bandpass F-1463/TS	Uhf bandpass filter
Filter, Bandpass F-1451/GRC	Vhf bandpass filter
Generator, Ringing TA-248/TT	Ringer
Generator Set, Gasoline and Diesel Engine Driven PU-406/M	Power trailer
Headset-Microphone H-157/AIC	Headset-microphone
Headset-Microphone H-133C/AIC	Secure headset-microphone
Loudspeaker LS-454/U	Loudspeaker
Mast, Antenna AB-577/GRC	Antenna mast
Mounting MT-3874/V	KY-8 mounting
Mounting MT-1029/VRC	Fm mounting
Power Supply Mounting PP-7069/TSC-61	Mounting tray
Panel, Control Indicator C-10417/TS	Radio-audio control panel
Panel, Control Indicator C-10418/TS	Telephone control panel
Power Supply PP-7442/G	Dc power supply
Radio Set AN/ARC-115	VHF radio set

Receiver-Transmitter, Radio RT-524A/VRC	FM radio set
Receiver-Transmitter, Radio RT-698/ARC-102	HF radio set
Receiver-Transmitter, Radio RT-1167/ARC-164	UHF radio set
Telephone Set TA-312/PT	Telephone
Tripod, Antenna AB-1256/GRC	Antenna tripod
Shelter, Electrical Equipment S-594/TSC-61B	Shelter
Speech Security Equipment TSEC/KY-8	KY-8

1-7.1 Hand Receipt (-HR) Manuals

This manual has a companion document with a TM number followed by -HR (which stands for Hand Receipt). The TM 11-5895-469-12-HR consists of preprinted hand receipts (DA Form 2062) that list end item related equipment (i.e., COEI, BII, and AAL) you must acount for. As an aid to property accountability, additional -HR manuals may be requisitioned from the US Army Adjutant General Publications Center in Baltimore, MD, in accordance with the procedures in chapter 3, AR 310-2, and DA Pam 310-10-2.

Section II. DESCRIPTION AND DATA

1-8. Purpose and Use

a. Purpose. Flight Coordination Central AN/TSC-61B (fig. 1-1) is a transportable unit that provides facilities for air traffic coordination, warning air defense identification, and in-flight assistance within an assigned zone of responsibility on a continuous basis. Altitude, time, and distance flight plan data for airborne aircraft can also be coordinated in the FCC.

b. Use. The FCC usually functions as an intermediary or extension of flight operation centrals (FOC's) which are the main traffic control facilities of the enroute system. It provides facilities to establish air-to-ground radio communications with frequency-modulated (fm) equipment (tactical fm) in the very-high-frequency range and with amplitude-modulated (am) equipment (pilot command control) in the ultra-high-frequency (uhf), very-high-frequency (vhf) and high-frequency (hf) ranges. Facilities are also included for telephone, and ground-to-ground radio communications with associated airfields and ground installations, as well as with other FCC and FOC flight progress and plotting facilities.

1-9. Description of Equipment

All operating components of the FCC are housed in an S-594/TSC-61B shelter (figs. 1-2, 1-3, and 1-4). The shelter is fully insulated and weatherproofed and can be moved by truck or airlifted. The shelter includes a one-section rear door for entry into the shelter. All equipment racks and mounts are secured to the walls and floors of the shelter. Power and signal wiring are housed in wire ducts. An air conditioner is mounted on the rear of the shelter. The main antenna entry panel is located on the curbside wall. Provisions for mounting an antenna array are made on the roadside wall. The power entrance panel and a gasoline tank for a heater are located on the roadside rear wall of the shelter. The gasoline heater exhaust pipe exits through the roadside wall. The telephone line entrance panel and the remote radio and telephone exit panel are located on the roadside wall. The exhaust fans vent to the front of the shelter. The interior of the shelter is divided into two rooms, the operations room and the radio equipment room (fig. 1-5). Vents to the outside allow cool airflow to the dc power supplies and radio equipment. A partition with a sliding door separates the rooms. The following subparagraphs describe the major components of the FCC.

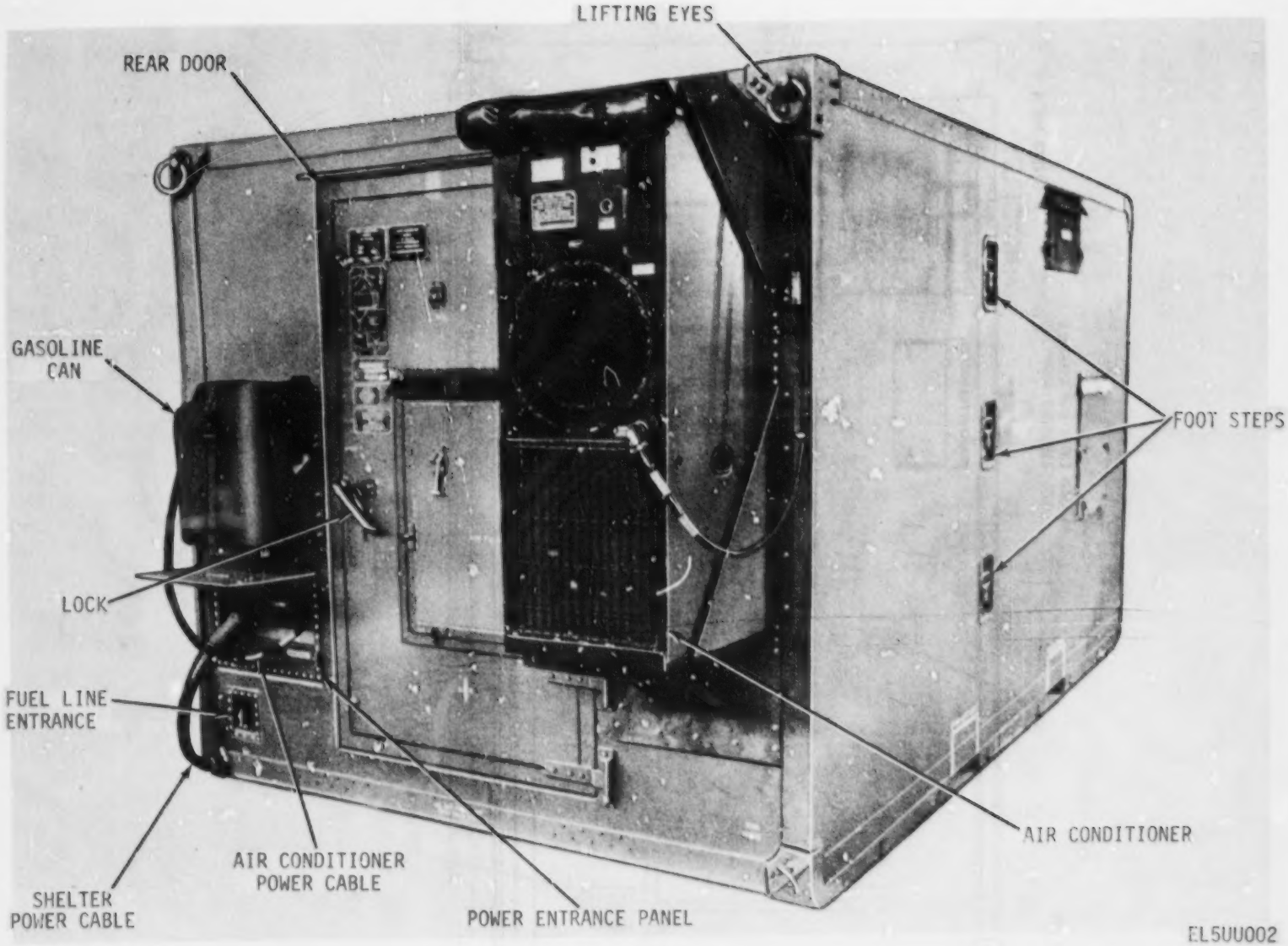


Figure 1-2. Shelter, Rear View.

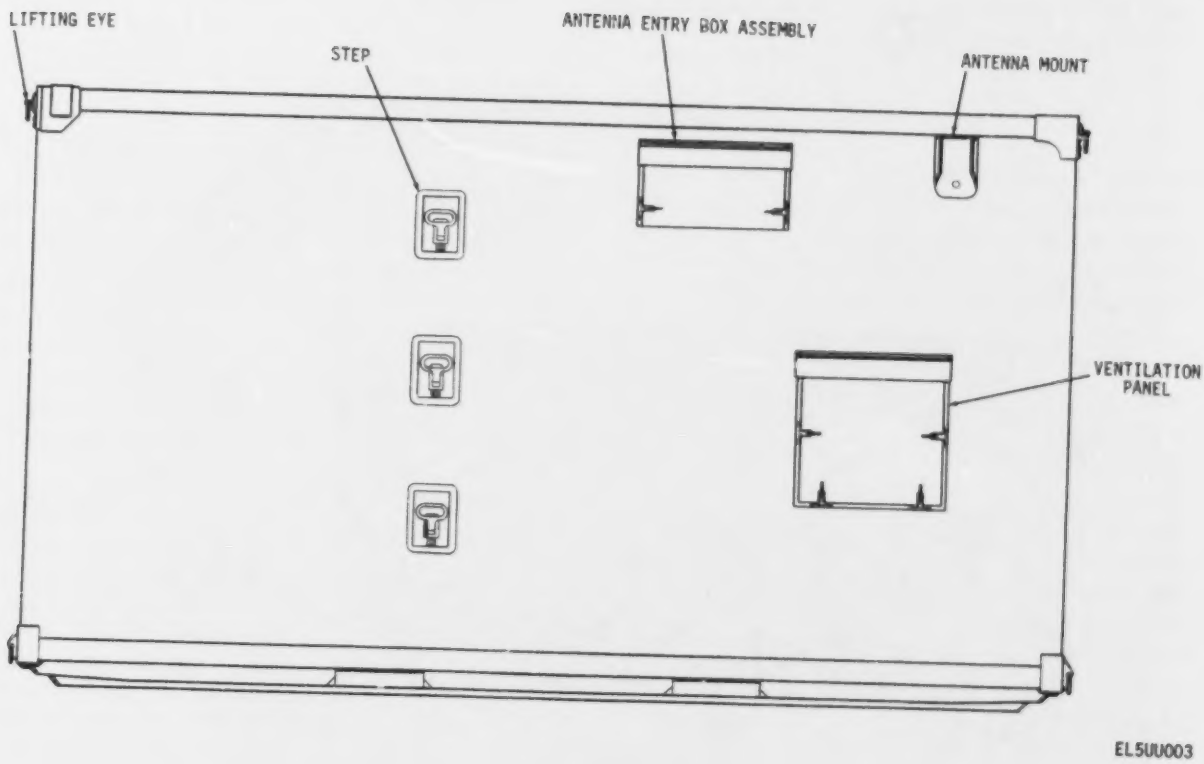


Figure 1-3. Shelter, Curbside View.

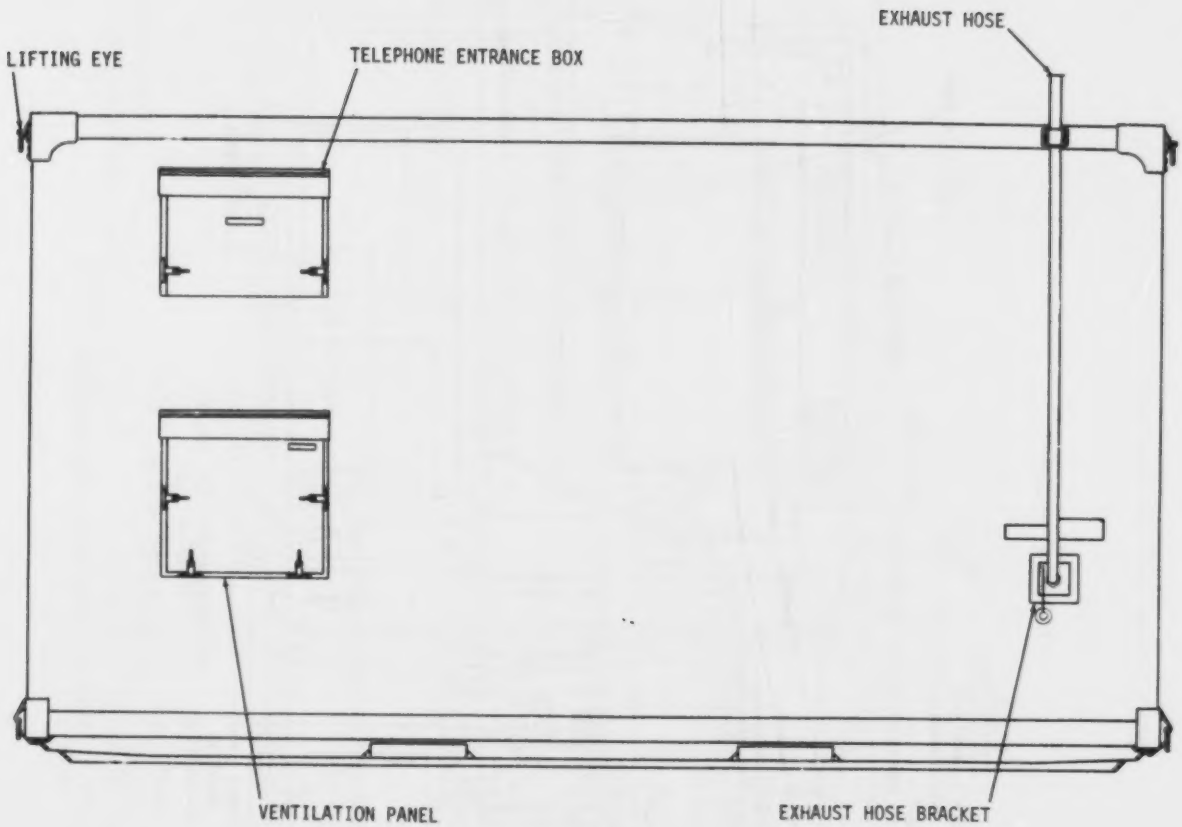


Figure 1-4. Shelter, Roadside View.

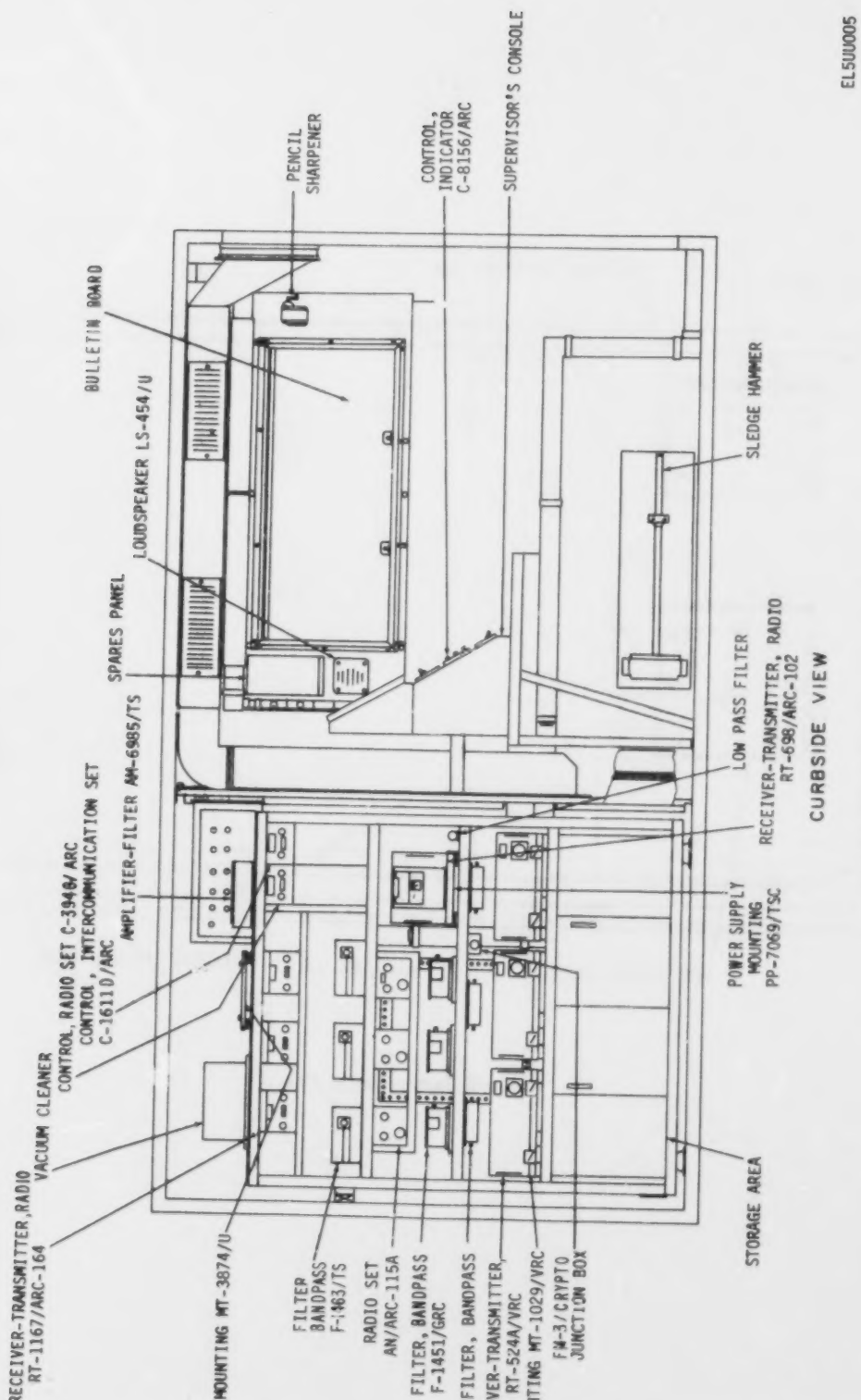


Figure 1-5. Shelter, Interior View (sheet 1 of 5).

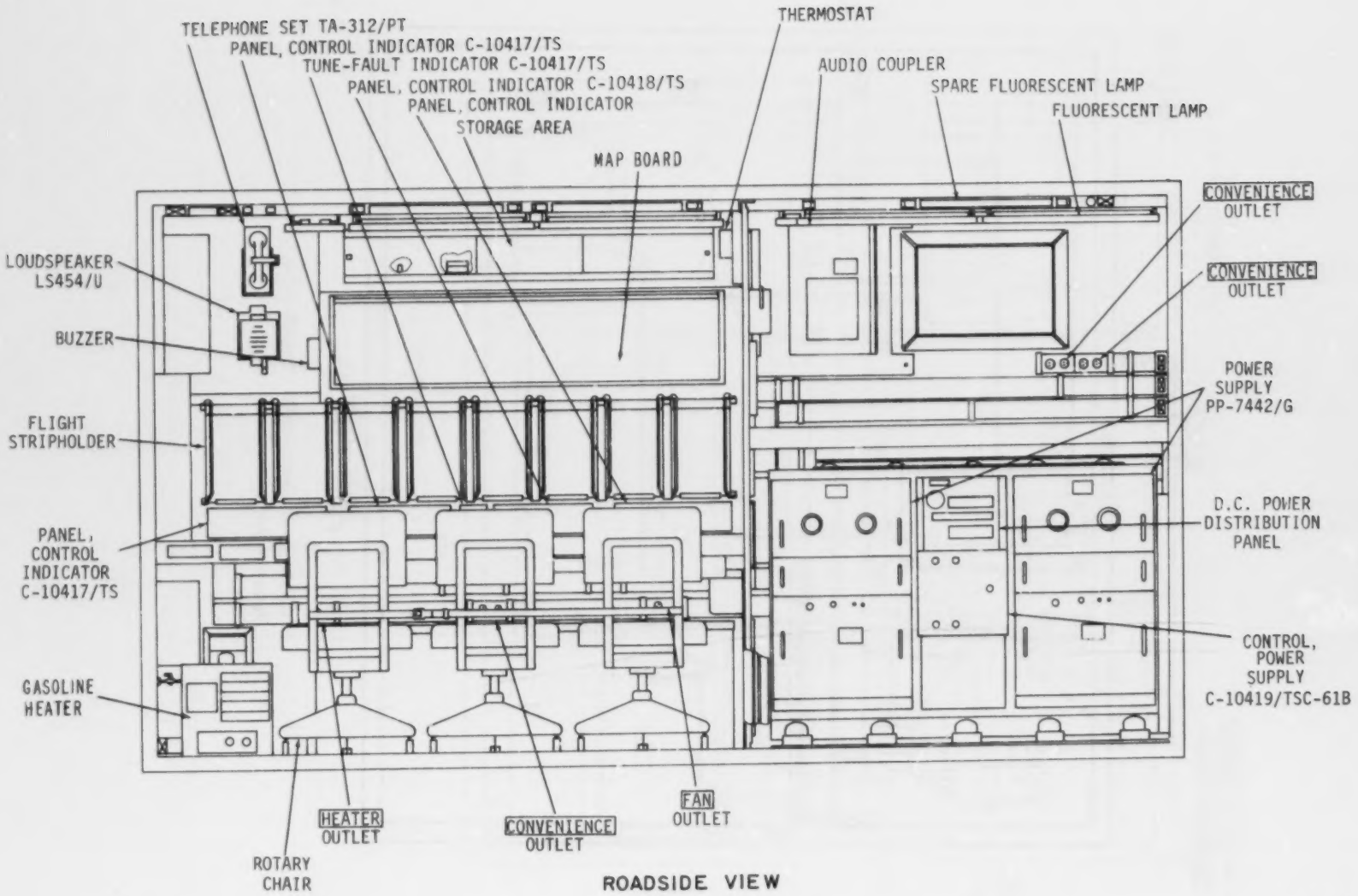


Figure 1-5. Shelter, Interior View (sheet 2 of 5).

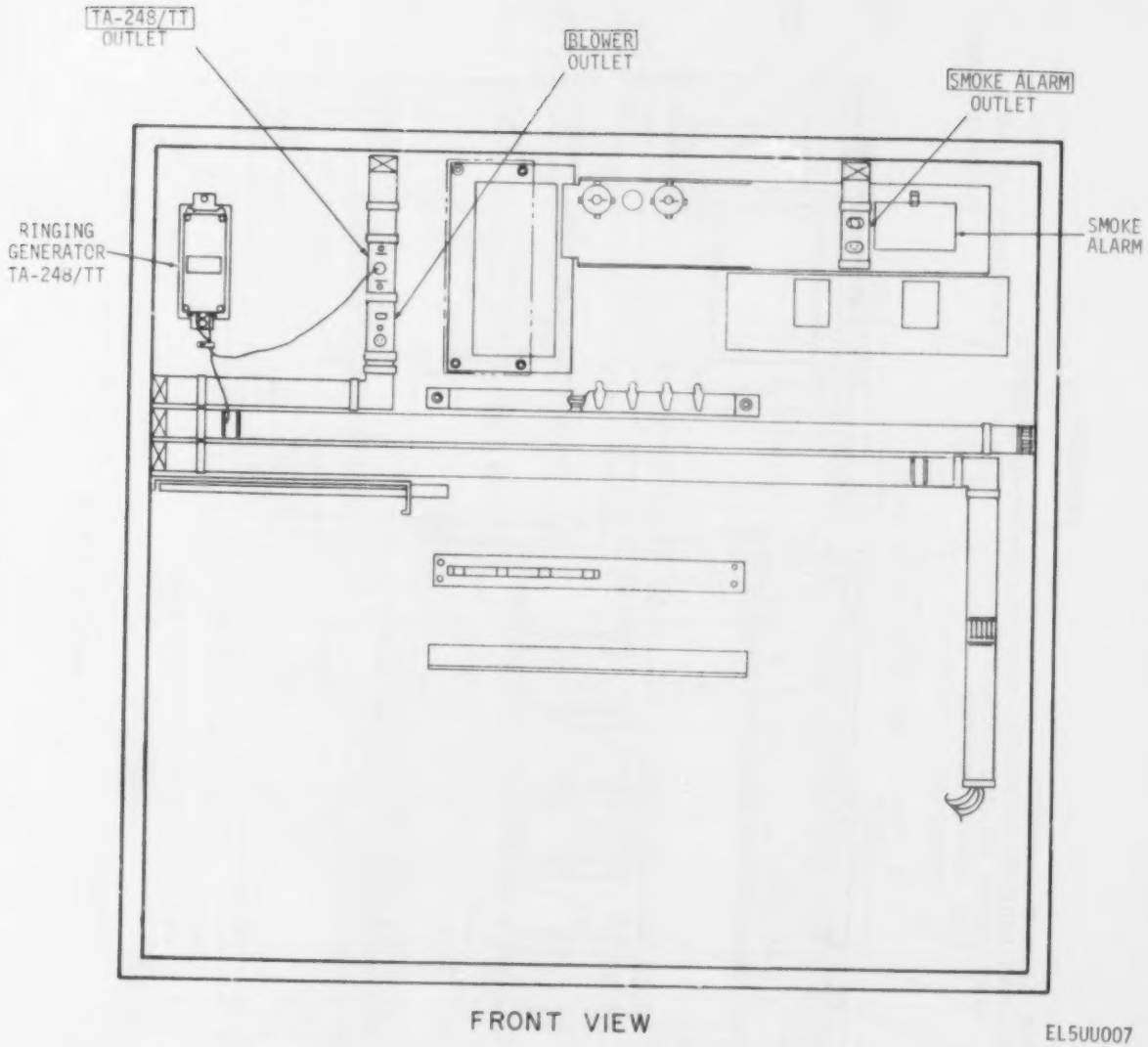


Figure 1-5. Shelter, Interior View (sheet 3 of 5).

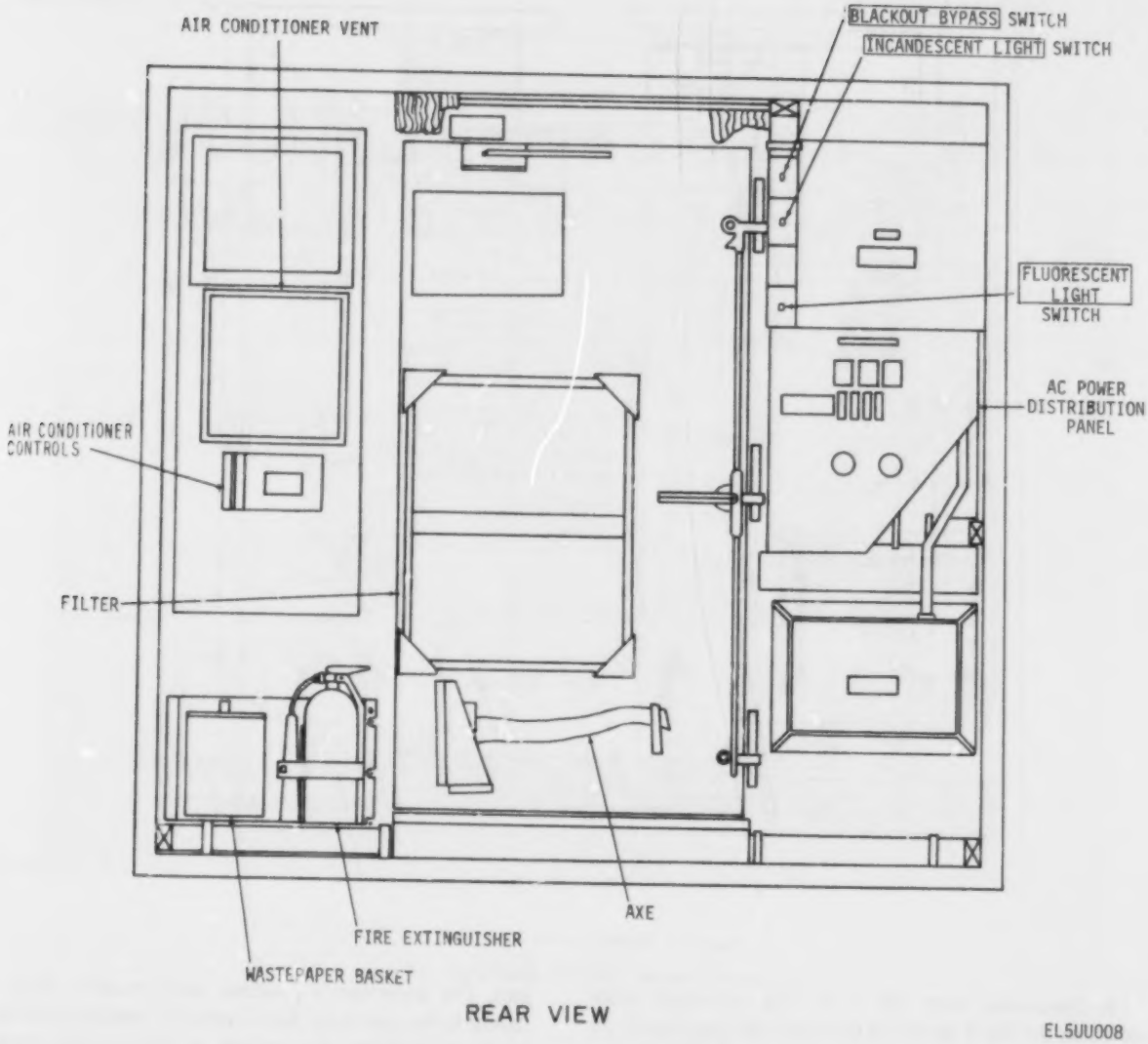


Figure 1-5. Shelter, Interior View (sheet 4 of 5).

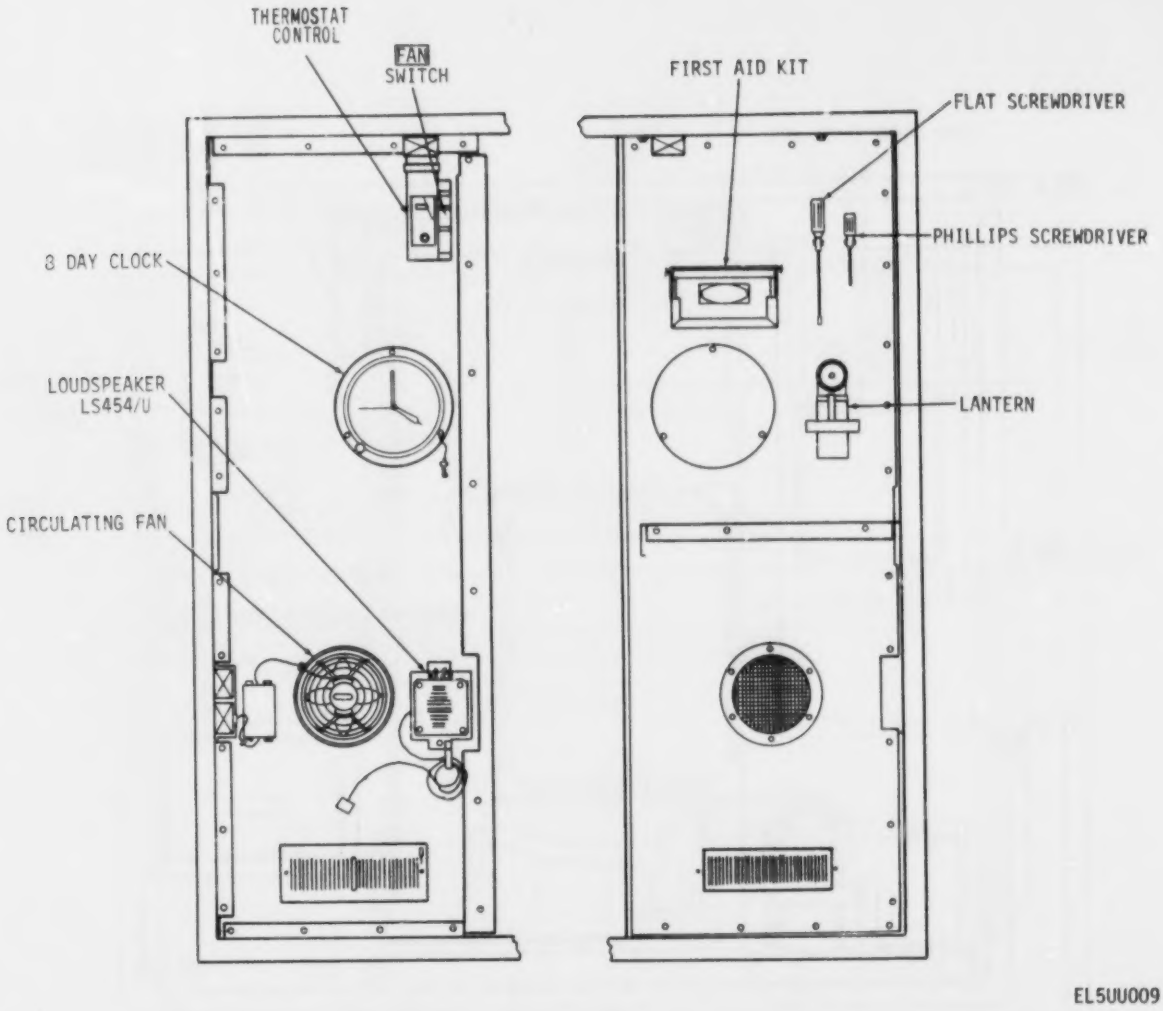


Figure 1-5. Shelter, Interior View (sheet 5 of 5).

a. Operations room (fig. 1-5). The operations room contains the flight status console and the map board on the roadside of the shelter. The console for the supervisor's operating position (fig. 1-6) is located on the curbside of the shelter. Two identical flight controller (operator's) positions (fig. 1-7) are set into the flight status console. The position nearer to the radio equipment room is identified as operator position one, and the position nearer the rear door is identified as operator position two. The supervisor's position, called position three, is nearer to the rear door. Each operating position contains a speaker-amplifier, footswitch, a radio-audio control panel, a telephone control panel, two headset-microphones. Position three also has an additional secure headset-microphone. Two headset-microphones are provided; under certain conditions, two operators can work at one position, one handling telephone calls and the other handling radio traffic.

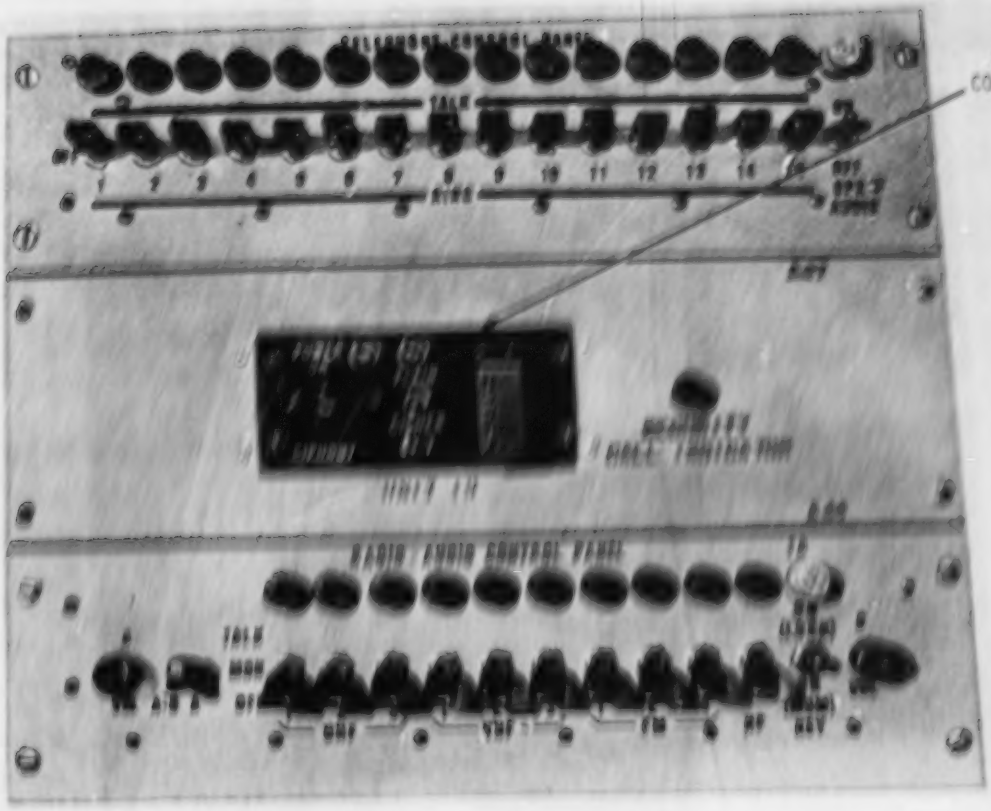
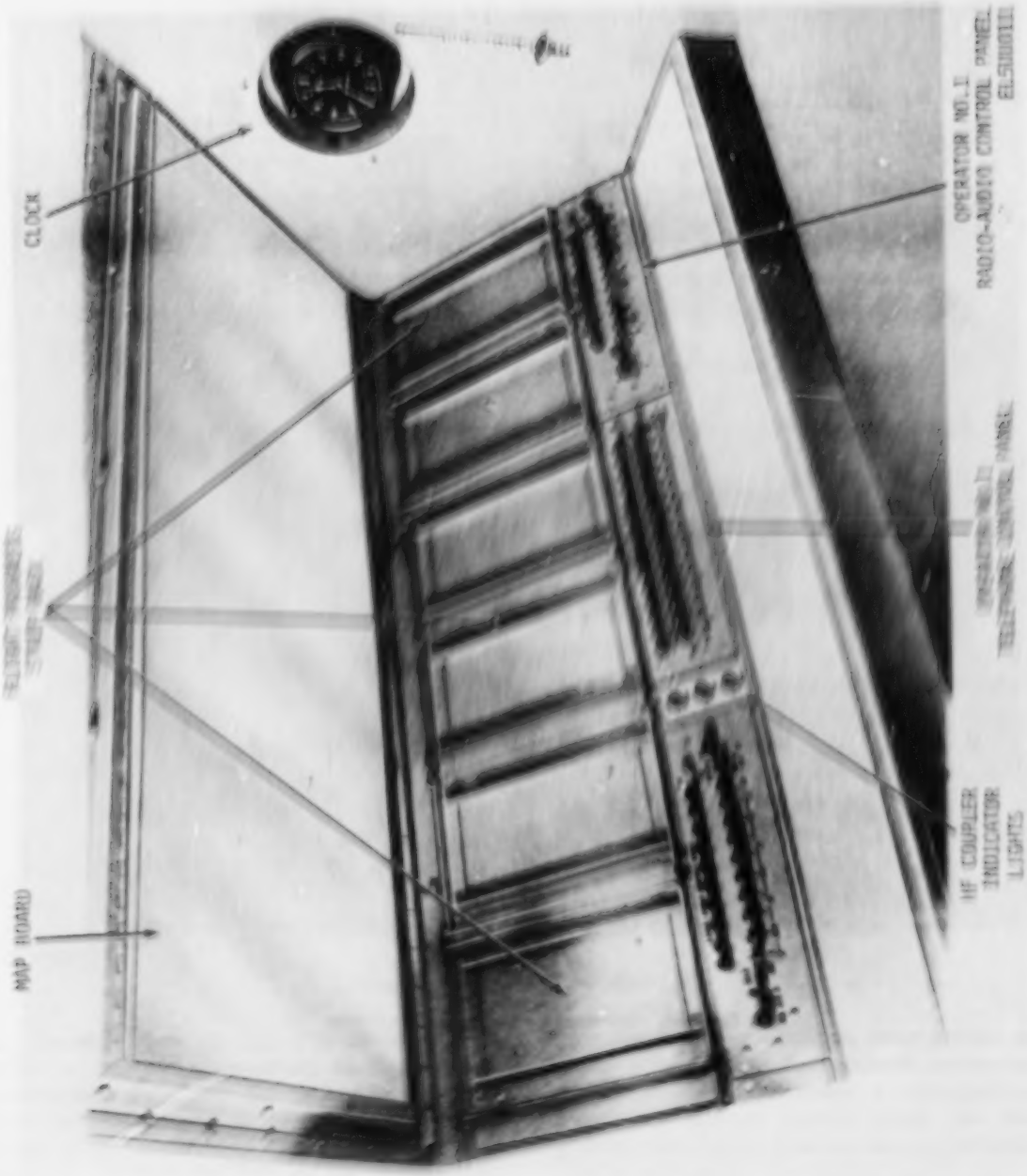


Figure 1-6. Flight Status Console, Supervisor's Position.



(4) *Footswitch.* Each footswitch is a foot-operated transmit switch. Pressing the footswitch keys the transmitter or transmitters selected by the associated radio-audio control panel.

(5) *Radio-audio control panel (fig. 1-7).* The radio-audio control panel consists of the following items: 10 pushbuttons; 10 call lights; 1 speaker control level switch; 1 headset amplifier circuit card; 1 microphone preamplifier card; two microphone-amplifier cards; and 1 audio relay assembly and four jacks for interconnection. The panel allows the operator to listen to the receiver output of up to 10 radios or to transmit simultaneously on up to 10 radios.

(6) *Telephone control panel (fig. 1-7).* Each telephone control panel consists of the following items: 1 speaker control level switch; 1 OFF-AUTO-ON level switch; 1 OFF-AUTO level switch; 10 call

lamps, and 9 jacks for interconnection. The telephone control panel permits control or operation of 15 telephone lines through the radio-audio control panel and audio coupler. Each lever switch has an associated call lamp (with press-to-light feature) that lights when an incoming telephone call is received from the audio coupler through the amplifiers in the radio-audio control panel. Each telephone switch can be left at OFF, set to TALK, or used in RING position to call a selected party. The OPR AUDIO switch completes audio lines to the audio portion of the radio-audio panel. The operator can patch one or more telephone lines to other lines with the telephone control assembly and also cut off the operator's headset from the patch so that the headset is free for other incoming or outgoing calls.

(4) *Flight status rack (fig. 1-7).* The flight status rack is mounted on the wall above the flight status console. It contains the strips that indicate aircraft progress from reporting point to reporting point. The flight status rack and the map board are common to the operator 1 and 2 positions.

(5) *AC power distribution panel (fig. 1-8).* The ac power distribution panel contains nine circuit breakers. The circuit breakers can serve as power on-off switches in addition to providing overload protection. All ac power to and from the shelter is applied through the panel. This panel is located on the rear wall of the operations room. Indicator lights for the generator source indicate whether the phase sequence of the generator is correct. A voltmeter and a frequency meter used to monitor each input phase are also located on the panel.

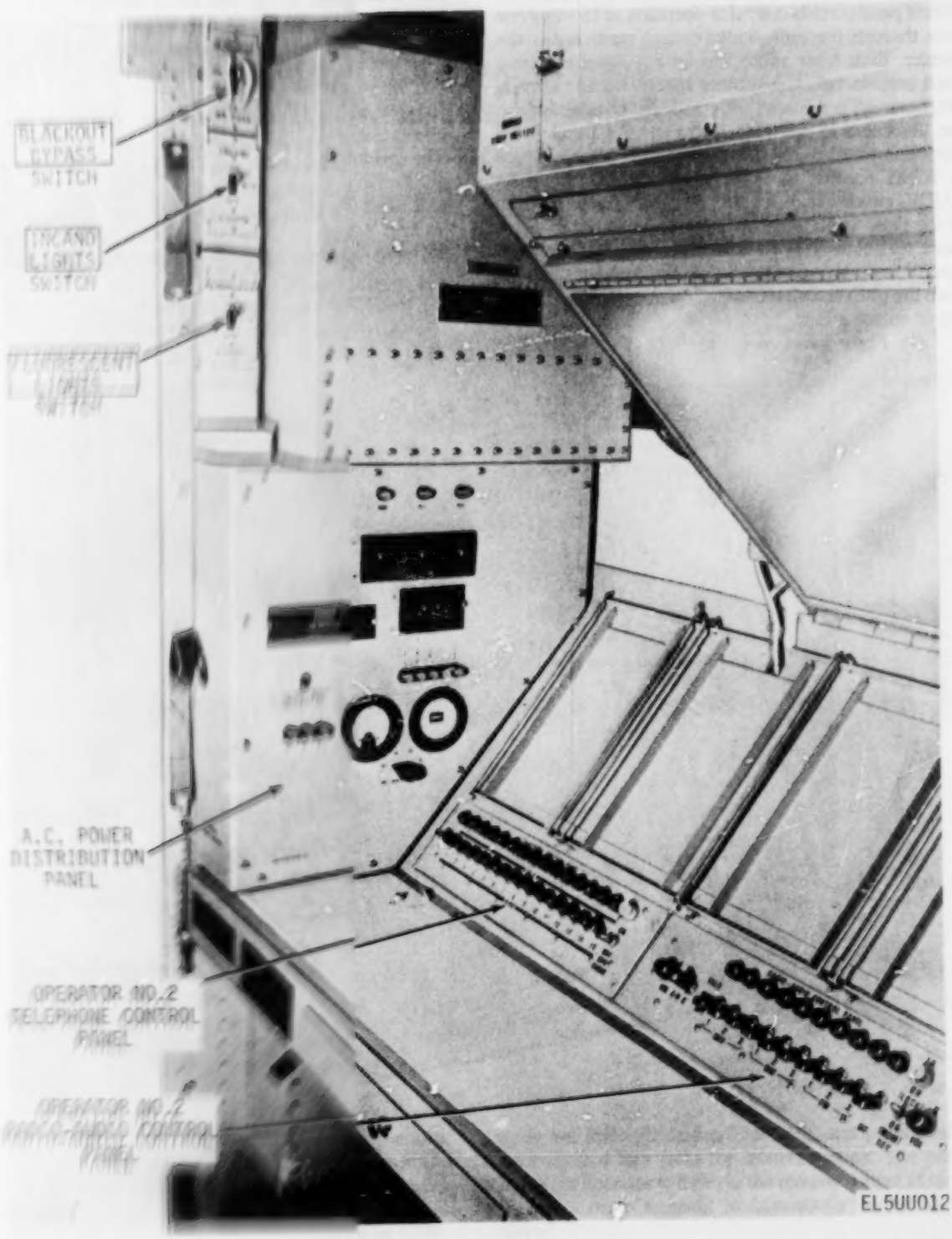


Figure 1-8. AC Power Distribution Panel.

(6) *Supervisor's position (fig. 1-5).* A third set of controls (telephone control panel, radio-audio control panel, footswitch, headset-microphones) is available at the supervisor's position. In addition, the KY-8 control for the secure voice system (TSEC/KY-8 with fm radio set No. 3) is mounted in the center of the supervisor's console.

(7) *HF antenna coupler lights (fig. 1-7).* A set of indicator lights located between the two operator positions indicate the operational status of the hf antenna tuner. Three lamps labeled TUNE (amber), OPERATE (green), and FAULT (red) indicate respectively whether the antenna tuner is tuning, is in a stable operative state, or is inoperative.

(8) *Door panel switches.* Three switches are mounted on the roadside of the rear door (fig. 1-5). One switch operates the five fluorescent lights in the shelter, the second turns on the exhaust fans in the radio equipment room, and the third is the blackout bypass switch. When on, the blackout bypass switch prevents shelter lights from being turned off when the rear door is opened. The blackout function is controlled by a microswitch mounted near the top of the door frame.

(9) *Bulletin board.* A bulletin board for posting appropriate notices is mounted on the roadside wall of the operations room above the supervisor's console (fig. 1-5).

(10) *Night alarm buzzer.* The buzzer in the telephone night alarm system is located on the curbside wall of the shelter behind the flight status rack (fig. 1-5).

(11) *Gasoline heater (fig. 1-5).* A gasoline heater is set on the floor under the flight status console at the operator two position. The heater output is controlled thermostatically by a control mounted on the upper cabinet over the operator one position (fig. 1-10).

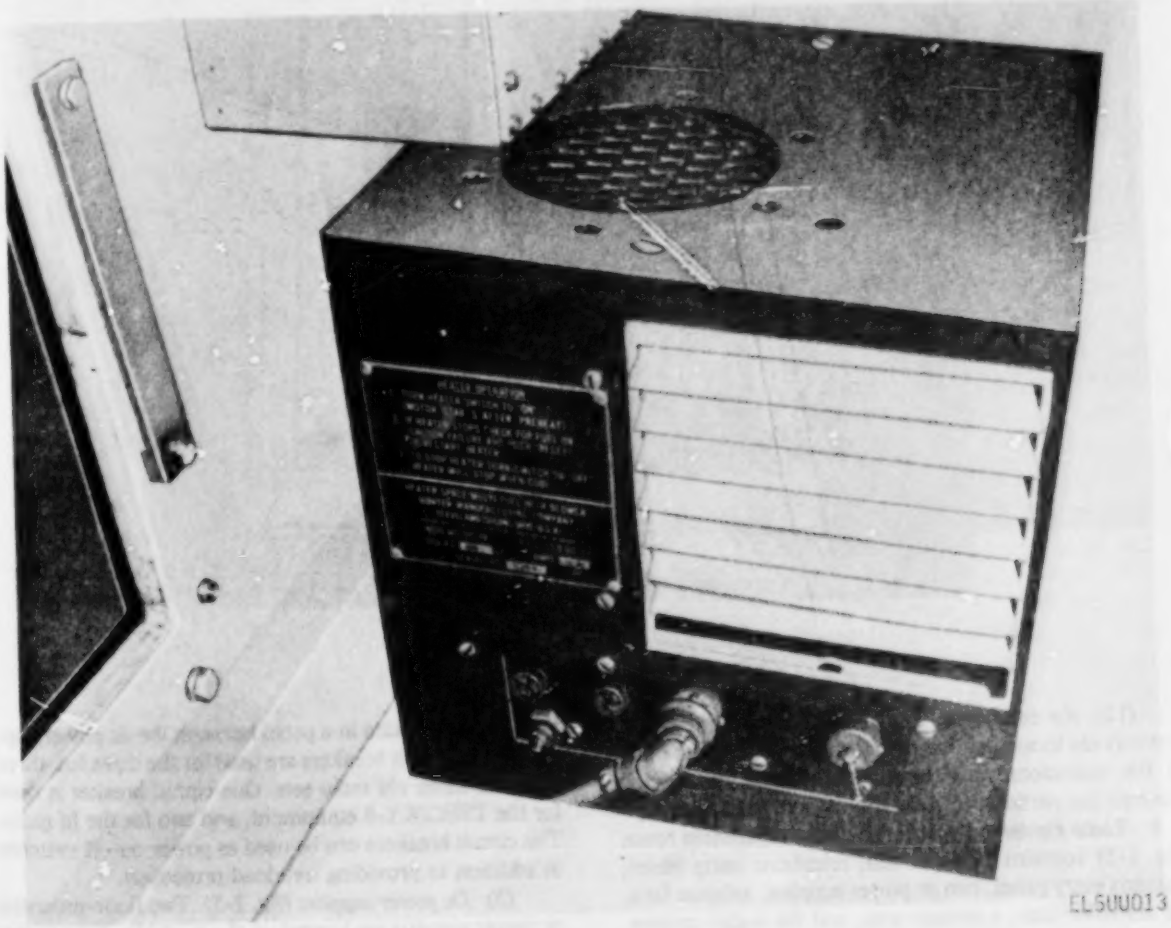


Figure 1-9. Heater Installation.

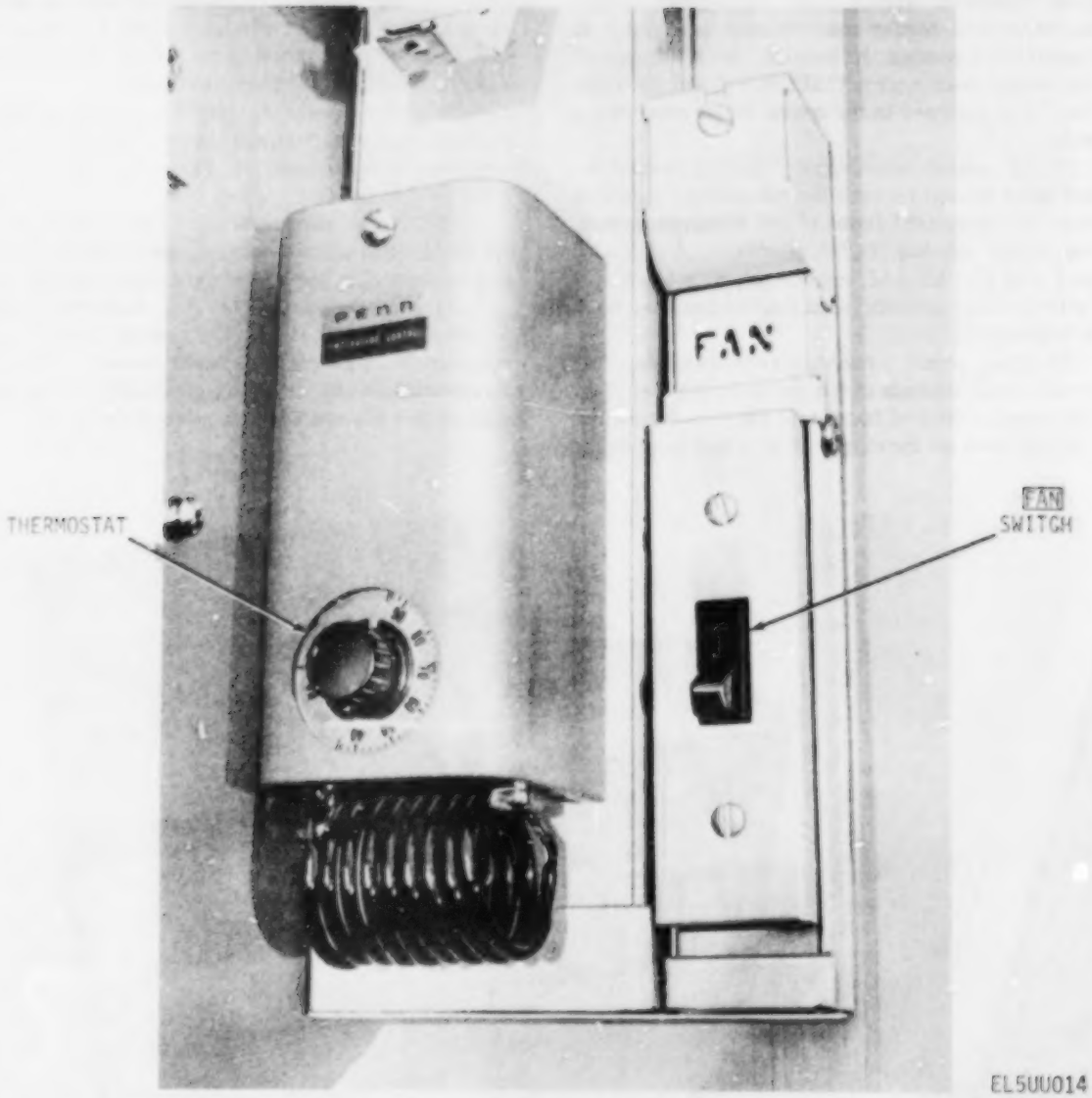


Figure 1-10. Thermostat Controls.

(12) *Air conditioner (fig. 1-2).* The air conditioner controls are located on the rear curbside. Two vents open to the operations room and two openings are ducted through the partition to the radio equipment racks.

b. Radio Equipment Room. The radio equipment room (fig. 1-5) contains 10 radio sets, telephone entry panel, antenna entry panel, two dc power supplies, exhaust fans, an amplifier filter, a storage area, and the audio coupler.

(1) *Radio set equipment rack.* All of the radio sets, including mounting and control units, are located on the radio set equipment rack on the curbside of the room.

(2) *DC distribution panel (fig. 1-5).* Twelve circuit breakers are located in a panel between the dc power supplies. Nine circuit breakers are used for the three fm, three uhf, and three vhf radio sets. One circuit breaker is used for the TSEC/KY-8 equipment, and two for the hf radio. The circuit breakers can be used as power on-off switches in addition to providing overload protection.

(3) *Dc power supplies (fig. 1-5).* Two floor-mounted dc power supplies are located on the roadside of the room. The power supply control for these dc power supplies is mounted between the units.

(4) *Circulating fan (fig. 1-5).* A small fan is installed in the roadside partition near the floor to provide circula-

tion between the two rooms when the sliding door is closed.

(5) *Exhaust blower.* The exhaust blower (figs. 1-3, 1-4, and 1-11) is mounted on the front wall of the shelter. It provides ventilation by drawing air from the shelter and exhausting it to the outside. Cool air from the air conditioner and outside air from the curbside vents is drawn over the radio equipment. Outside air is drawn through the air filter (fig. 1-12), past the dc power supplies, to dissipate generated heat.

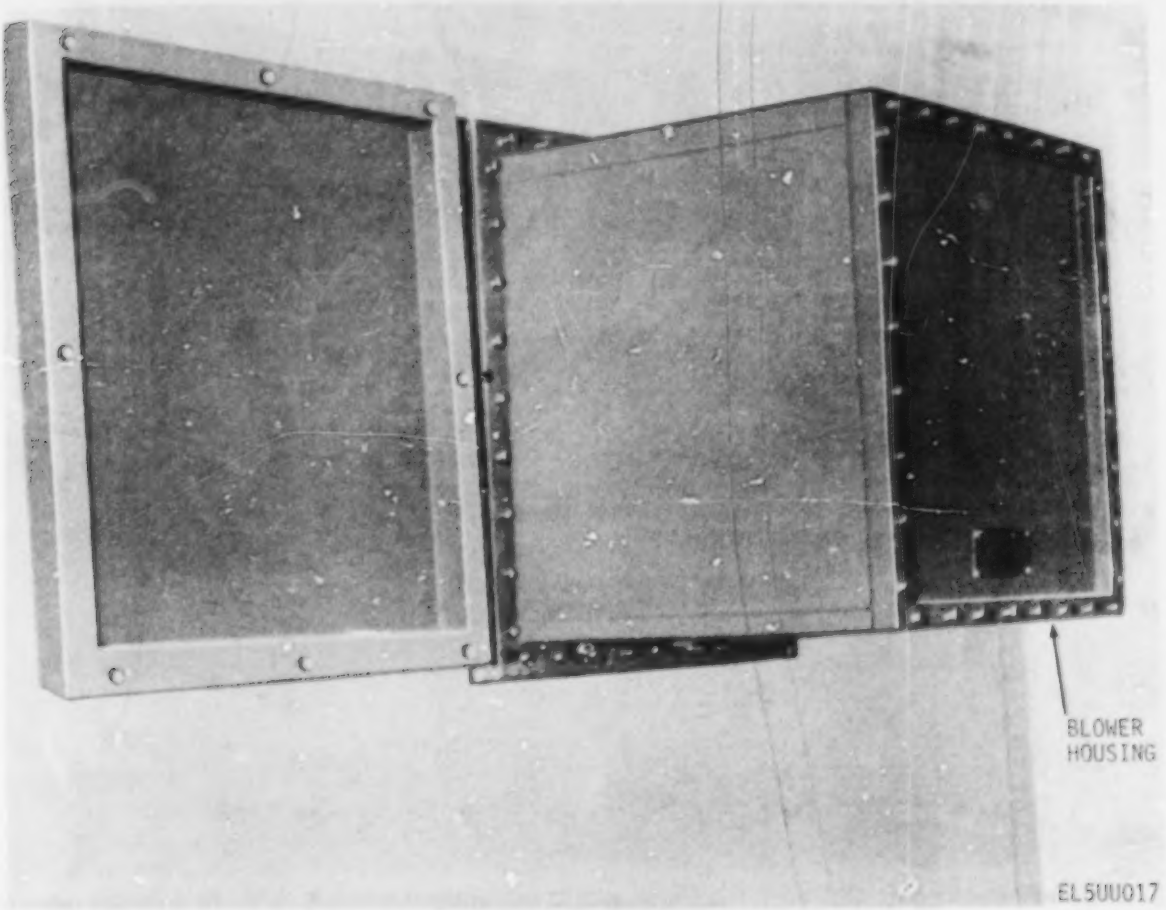


Figure 1-11. Blower Installation.

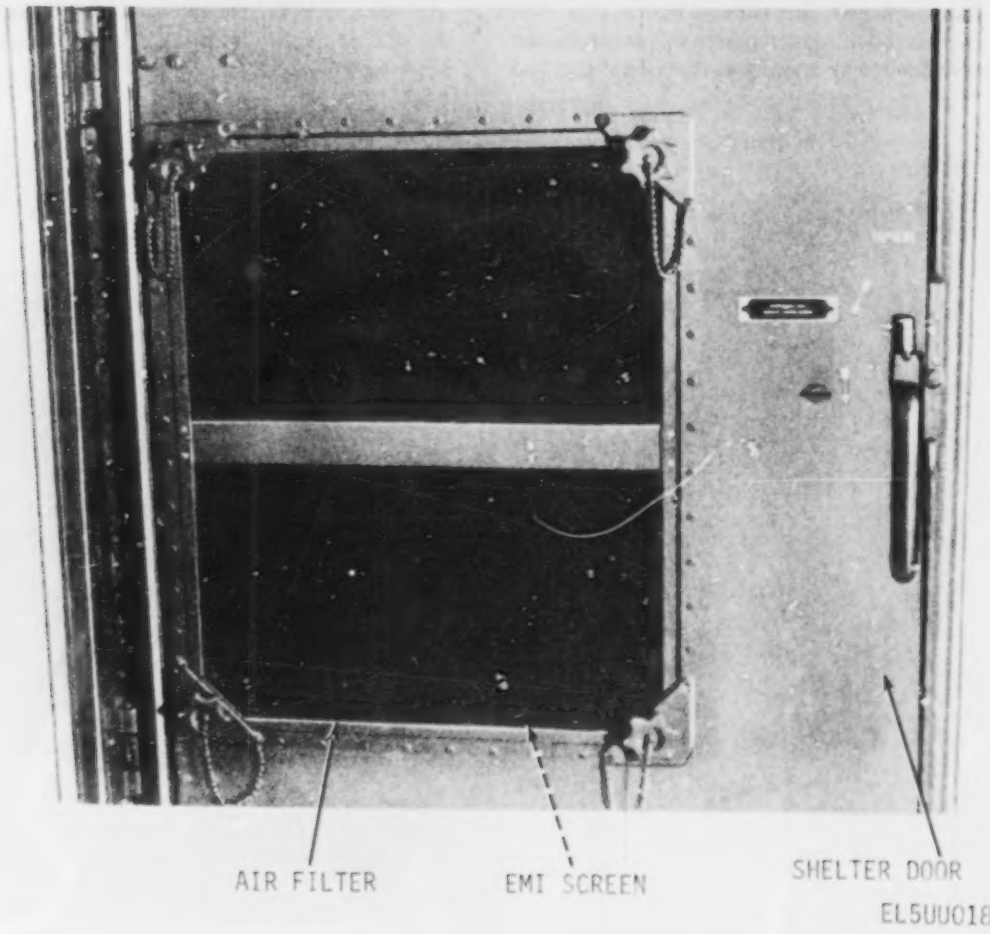


Figure 1-12. Shelter Air Filter.

(6) *Audio coupler (figs. 1-13 and 1-14).* The audio coupler is mounted on the roadside wall. It contains the control circuits for audio lines (both radio and telephone), control circuits for call lamps, and buzzer and flash system control. All telephone lines from the telephone entry panel and all control (key) and audio (both transmitting and received) circuits from the 10 controlled radios pass through the audio coupler. There are 10 active radio-audio cards (A1 through A10), 15 active telephone control cards (A17 through A31) and 1 buzzer flasher card (A16). Fuses are provided to protect the circuit cards and control circuits.

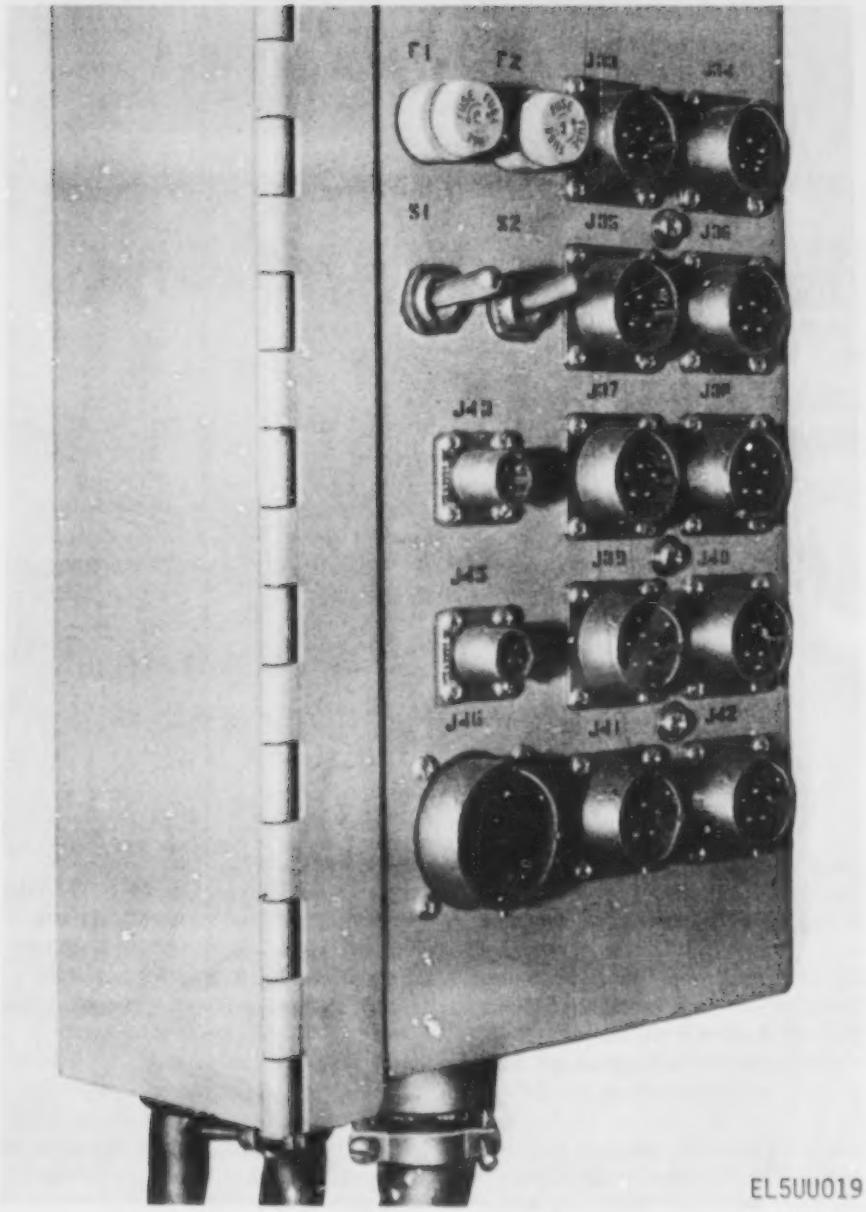


Figure 1-13. Audio Coupler.

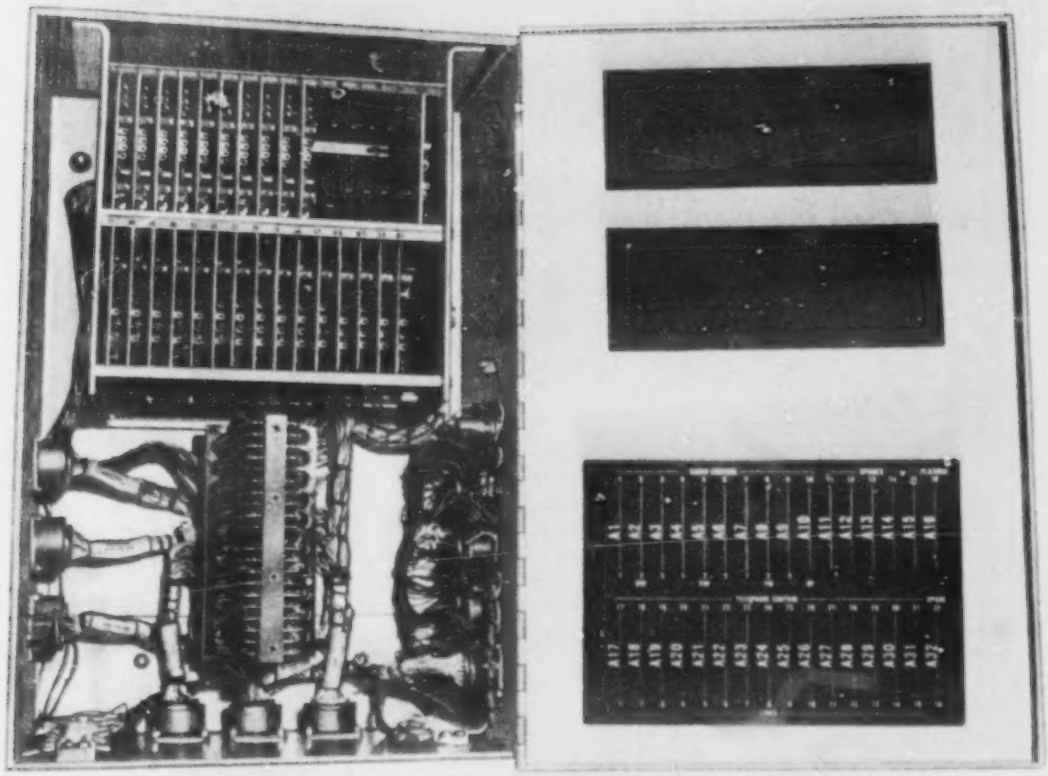


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Figure 1-14. Audio Coupler, Interior.

(7) *Voice security system.* When the voice security system is installed, the circuits from fm radio set No. 3 are disconnected at the radio end and the audio coupler is bypassed.

(8) *DC binding posts.* A strip of four large binding posts is mounted on the curbside wall behind the radio set equipment rack. Two red binding posts furnish a +28-volt dc connection to the respective radio circuit breakers; two black binding posts are connection points for the negative return line.

(9) *Smoke detector.* The smoke detector (fig. 1-5) provides an audible alarm (horn) when smoke density in the shelter reaches 0.6 to 2.0% smoke density per foot. It is a protection device for personnel and equipment to alert the crew of fire hazard.

c. Utility Components (fig. 1-5). The shelter is provided with a number of operating accessory items. These include rotary chairs, pencil sharpener, clock, two 5-pound CO_2 fire extinguishers, two first-aid kits, an axe, a sledgehammer, a broom, two hand lanterns, and a spares panel.

d. External Panels.

(1) *AC power entrance panel (fig. 1-2).* The power entrance panel contains a POWER IN receptacle for connection of the ac generator power source, a lug used to connect the shelter ground, a POWER OUT receptacle for the air conditioner and a circuit breaker for the air conditioner.

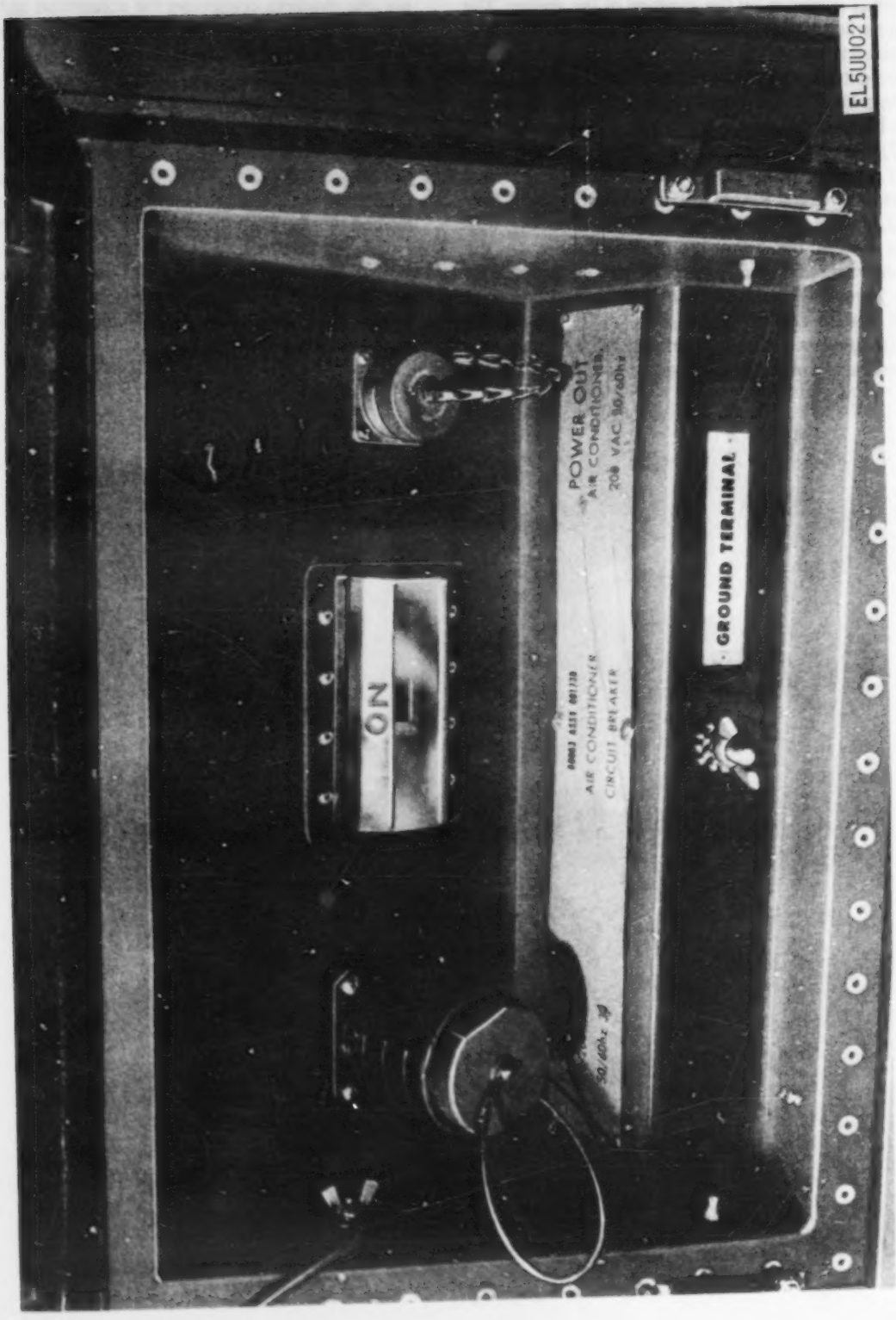


Figure 1-15. AC Power Entrance Panel.

(2) *Telephone entry panel (fig. 1-4).* The telephone entry panel is located on the roadside of the shelter. The telephone line entry contains 15 pairs of binding posts with associated lightning arrestors. A swiveling hook supports the entrance door panel when connections are made. A cable guide ring supports the telephone lines and keeps weight off the binding post connections.

(3) *Remote connectors.* The remote connectors are located on the telephone entry panel ((2) above). Three connectors, marked RADIO, TELEPHONE, and CONTROLLED TELEPHONE, contain wiring in parallel with similar connectors from the audio coupler to the telephone and radio-audio control panels in the operations room. These are designed to provide connection to a remote or slave shelter.

(4) *Antenna entrance panel (fig. 1-3).* The antenna entrance panel contains 10 coaxial rf connectors for the three vhf, three uhf, three fm, and the hf radio sets. There are also multipin connectors for connection to the three MX-6707/VRC matching units for the fm radio sets and a connector for the hf antenna coupler.

e. Antenna Arrays and Antennas.

(1) Two arrangements of antenna deployment are possible based on the tactical and environmental situation. The first (installation No. 1, fig. 1-16) does not employ a telescoping mast. The VUV, fm, and UVU antennas are mounted on the shelter. An hf and two fm antennas are located remote from the shelter. The second (installation No. 2, fig. 1-18) uses a 50-foot telescoping antenna mast with a UVU and an fm antenna for improved system capability. An hf and an fm antenna are also installed remote from the shelter. A VUV and an fm antenna are installed on the shelter.

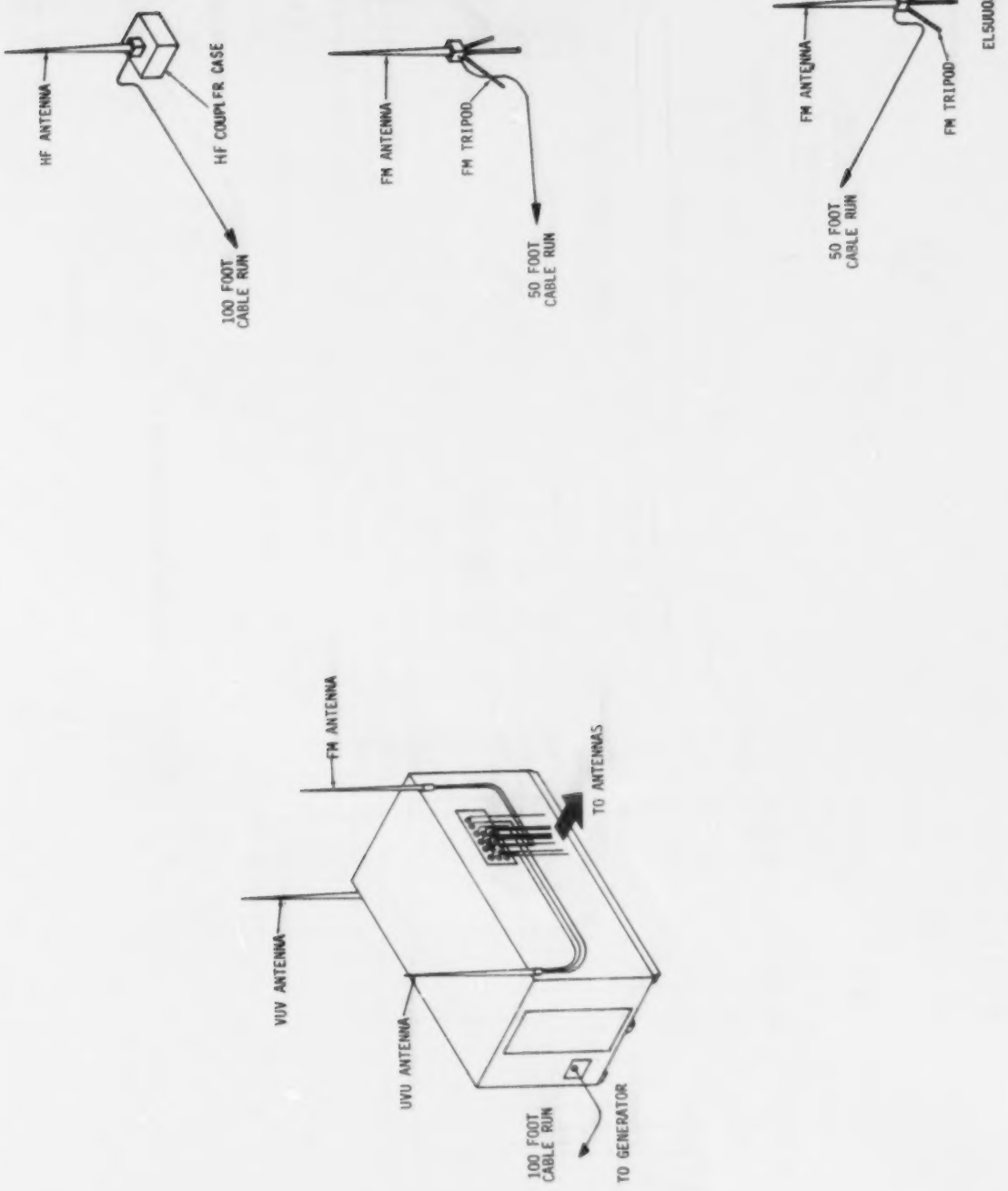


Figure 1-16. Antenna Installation No. 1.

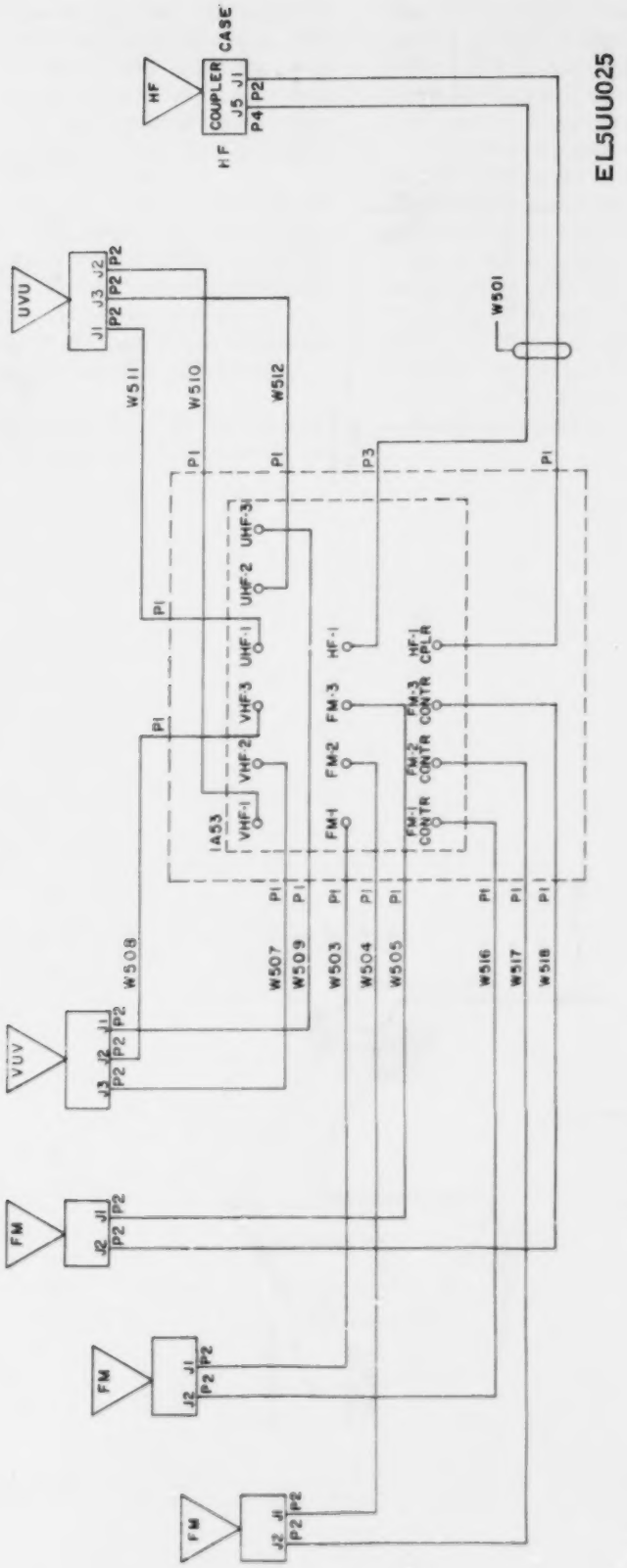
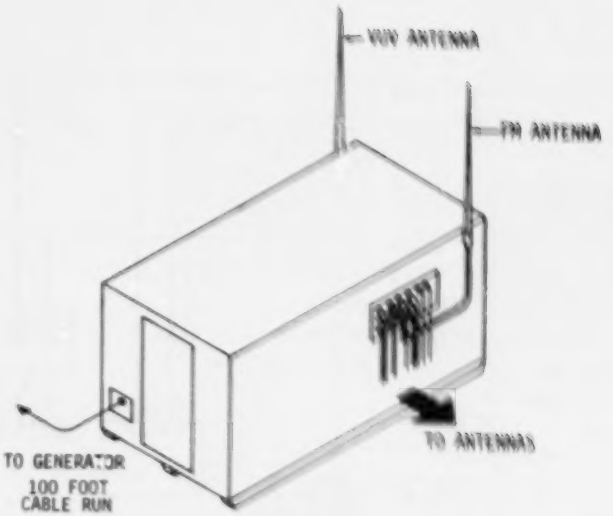


Figure 1-17. Connection Diagram, Installation No. 1.



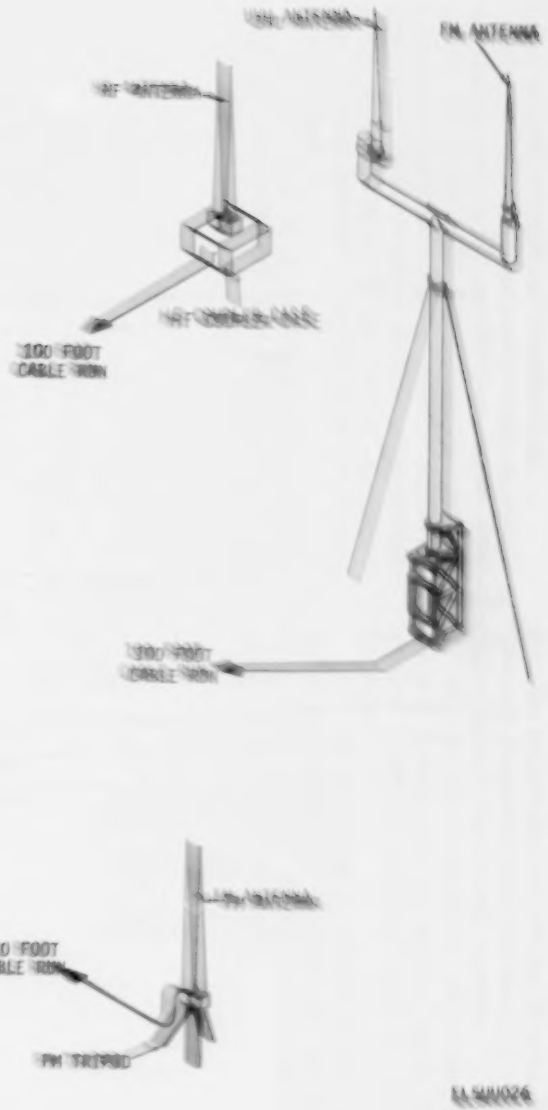


Figure 1-18. Antenna Installation No. 2.

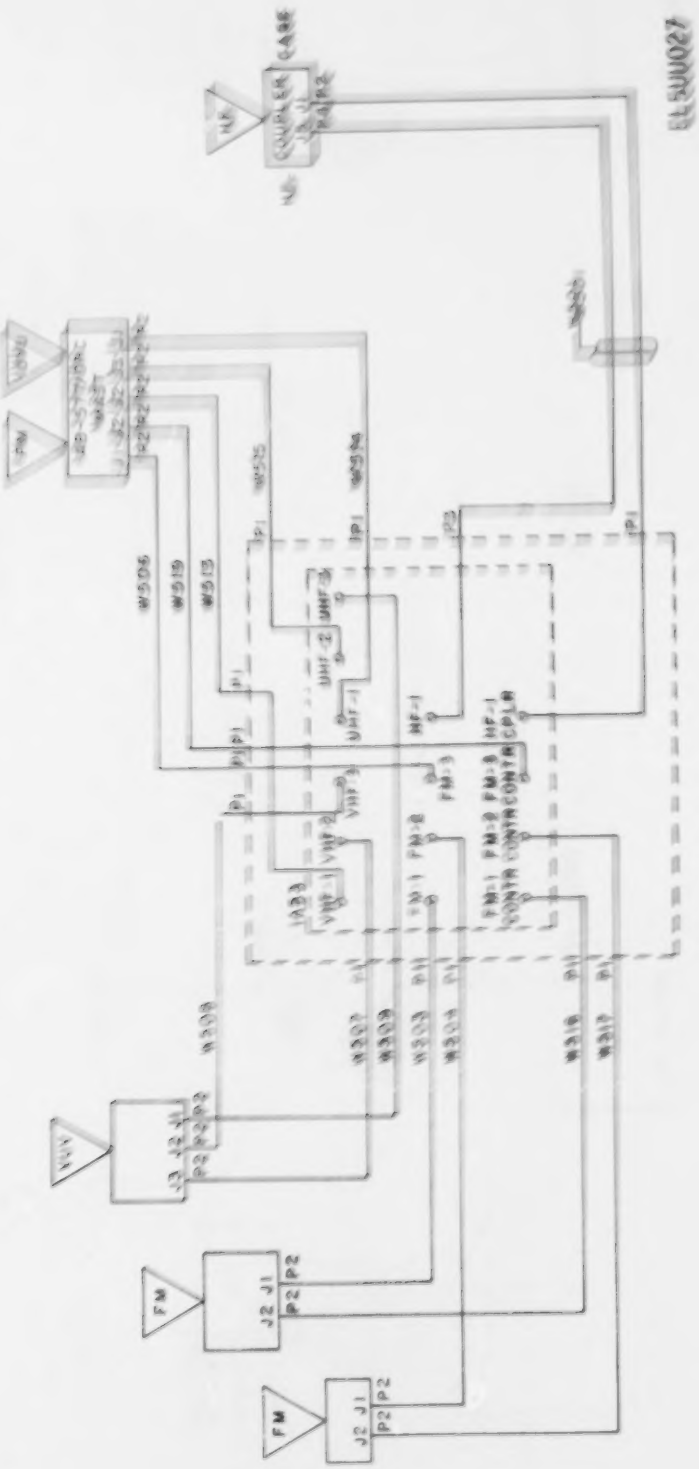


Figure 1-19. Connection Diagram, Installation No. 2.

(2) Two types of collinear multipole antenna arrays; uhf, vhf, uhf (UVU); vhf, uhf, vhf (VUV) are used in the FCC for operation over the vhf and uhf bands. The antennas are vertically polarized and omnidirectional.

(3) The telescoping mast is used to raise an array of two antennas (one fm and one UVU) to a height of 50 feet (fig. 1-1). It uses a pulley system, operated by pulling a wire rope by a gripping lifting mechanism, to extend the mast section. During extension, the four bottom sections extend simultaneously as the top four sections remain locked. Further operation of the jack causes the top sections to extend.

(4) The mast is of lightweight, high strength aluminum construction and can be handled and erected by three persons in approximately 25 minutes without the use of special tools or equipment. The mast proper has eight tubular sections.

(5) Three sets of guy wires are used to support the mast. One group is attached at the top of the tubular base, the second group at the fourth section and the top group at a collar welded to the top array assembly.

(6) The mast is mounted on a three-legged portable baseplate. During transit, the baseplate legs are folded up and form a container in which all installation components are carried.

(7) The hf antenna is shunt coupled from the shelter and consists of the hf coupler case with the hf antenna coupler inside the case and the hf antenna mounted on the top of the case (fig. 1-20).

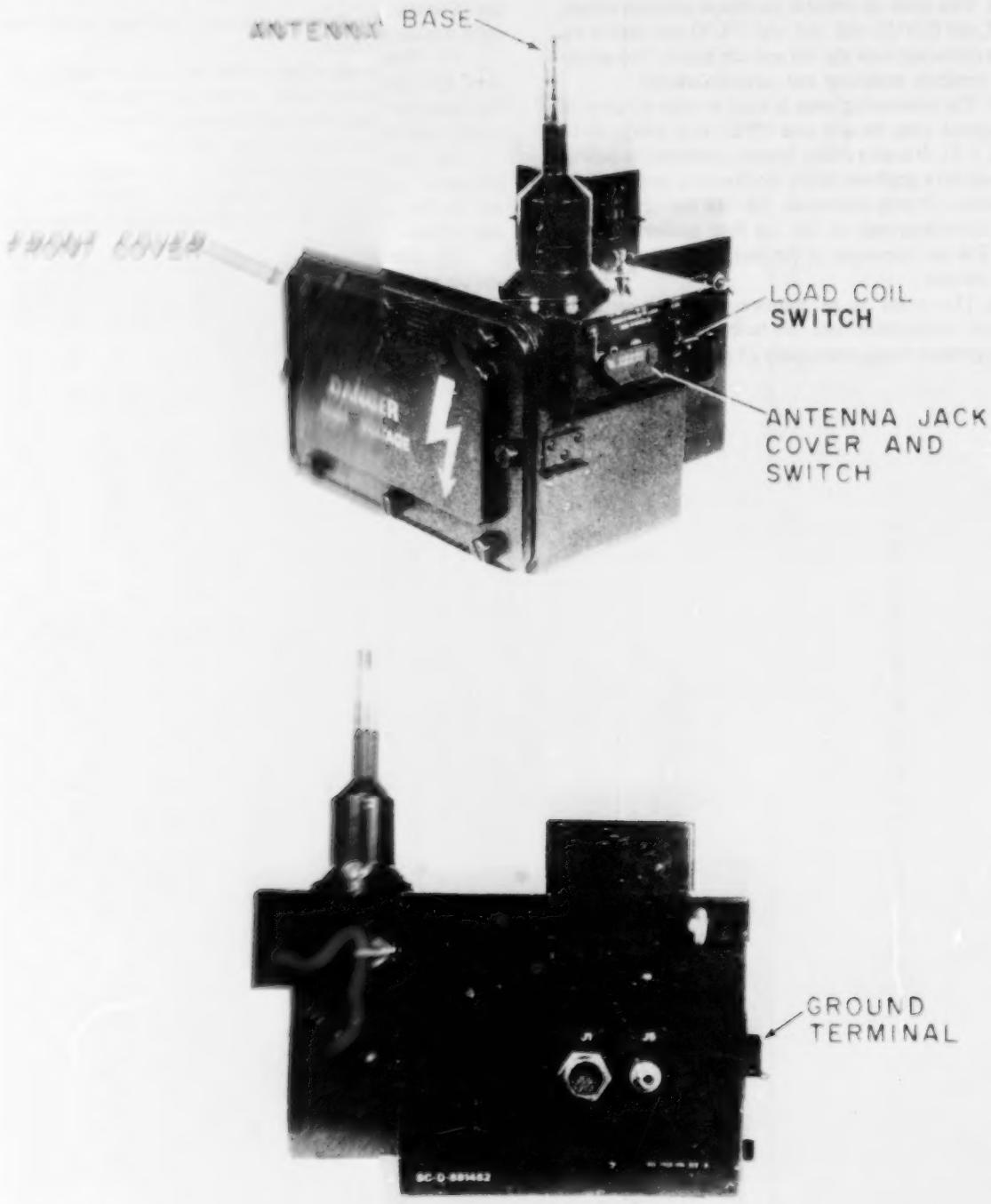


Figure 1-20. HF Coupler Case.

f. Additional Equipment Required. Two trailer-mounted power units (PU-406/M) are required for 24-hour operation of the FCC. An equivalent 15KW or 30KW, 50/60 Hz, 3 phase, 120/208 volt 4-wire generator can be used in place of the PU-406/M.

1-10. Tabulated Data

Performance data for installed electronic equipment of the FCC are listed below. Refer to appendix A for technical manuals which provide detailed characteristics. Appendix B identifies components comprising an end item.

Receiver-Transmitter Radio RT-1667-AN/ARC-164-(V) (3 sets).	Two-way am; voice; 225.0 to 399.75 MHz; 7,000 crystal-controlled channels; transmitter power output—10 watts (tone modulated). **NOTE** A separate guard channel receiver is incorporated in each uhf radio set for continuous monitoring of the uhf emergency distress channel.
Radio Set AN/ARC-115A (3 sets).	Two-way am; voice; transmitter power output 6 watts minimum. TRANS—680 channels, 116.0 to 149.95 MHz. RECV—720 channels, 116 to 151.95 MHz.
Radio Set AN/ARC-102 (1 set).	Two-way am; voice; single sideband, 2 to 29.999 MHz; 2,800 channels; transmitter output—100 watts.
Receiver-Transmitter, Radio RT-524/VRC (3 sets).	Two-way fm; 30 to 70 MHz; 280 channels; minimum transmitter output—20 watts. **NOTE** One fm set is adjusted and used in conjunction with TSEC/KY-8 equipment and other components to provide secure (ciphered or X-mode) operation.
Antenna AS-3244/TS	Frequency range—116-150 MHz, 225-400 MHz. Isolation—33 dB between any two dipoles. Maximum power output—50 watts Height—168.25 in. (427.35 cm) Weight—16.5 lb. (7.48 kg)
Antenna AS-3243/GRC	Frequency range: 116-150 MHz, 225-400 MHz. Isolation: 33 dB between any two dipoles. Maximum power output—50 watts Height—114.25 in. (290.19 cm) Weight—12.5 lb. (5.67 kg)
Telephone circuits	15 circuits
Shelter and accessory equipment:	
Mast, Antenna AB-577/-GRC (Telescoping mast):	
Maximum elevated height	50 ft ± 1 foot
Nested height	7 ft 7½ inches
Diameter at mast base	8½ inches
Diameter at top of mast	3½ inches
Weight of mast	132 pounds
Weight of base	86 pounds
Height of base-transit condition	37½ inches
Diameter of base-transit condition	15½ inches
Maximum lifting capability	150 pounds
Power Supply, PP-7442/G (DC Power Supply)	Input voltage requirement—220 volts, 60 Hz 3 phase. Input current requirement—30 amperes. Output current—200 amperes DC maximum output voltage—27-32 vdc. Current regulation—1 percent Current ripple—1 percent
Shelter S-280A/G	83" high, 147" long, 87" wide, 1200 pounds empty weight, 614 cubic foot interior, 4 lift and tiedown points. Skid-mounted with provisions for forklifting. **CAUTION** Forklift extensions must go through all three skids.
Heater, multifuel	15,000 BTU, 120 volts ac, 60 Hz input.

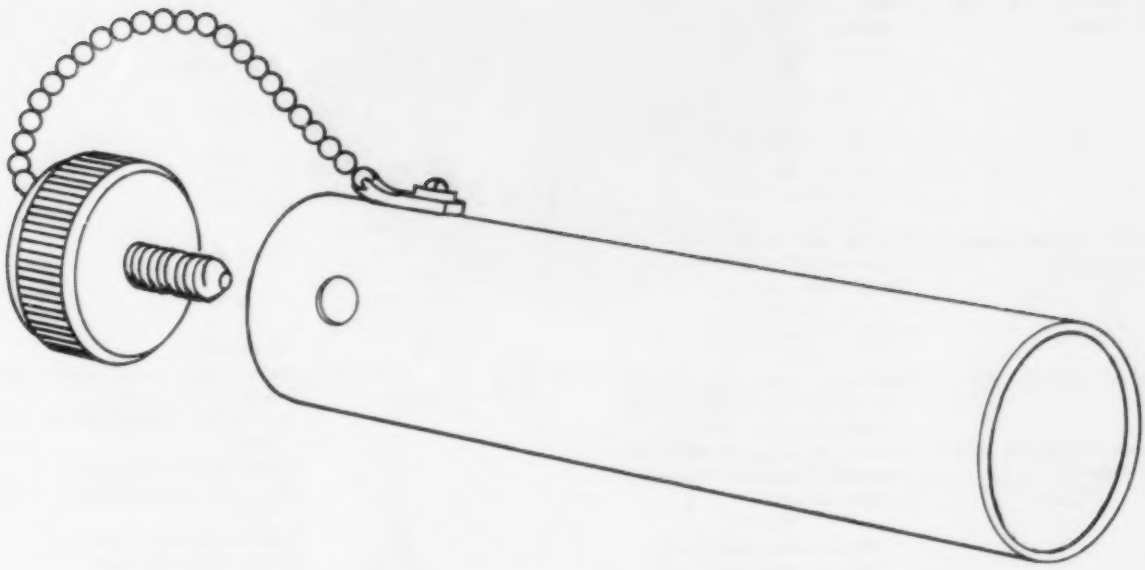


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Figure 1-21. HF Long Wire Antenna Adapter.

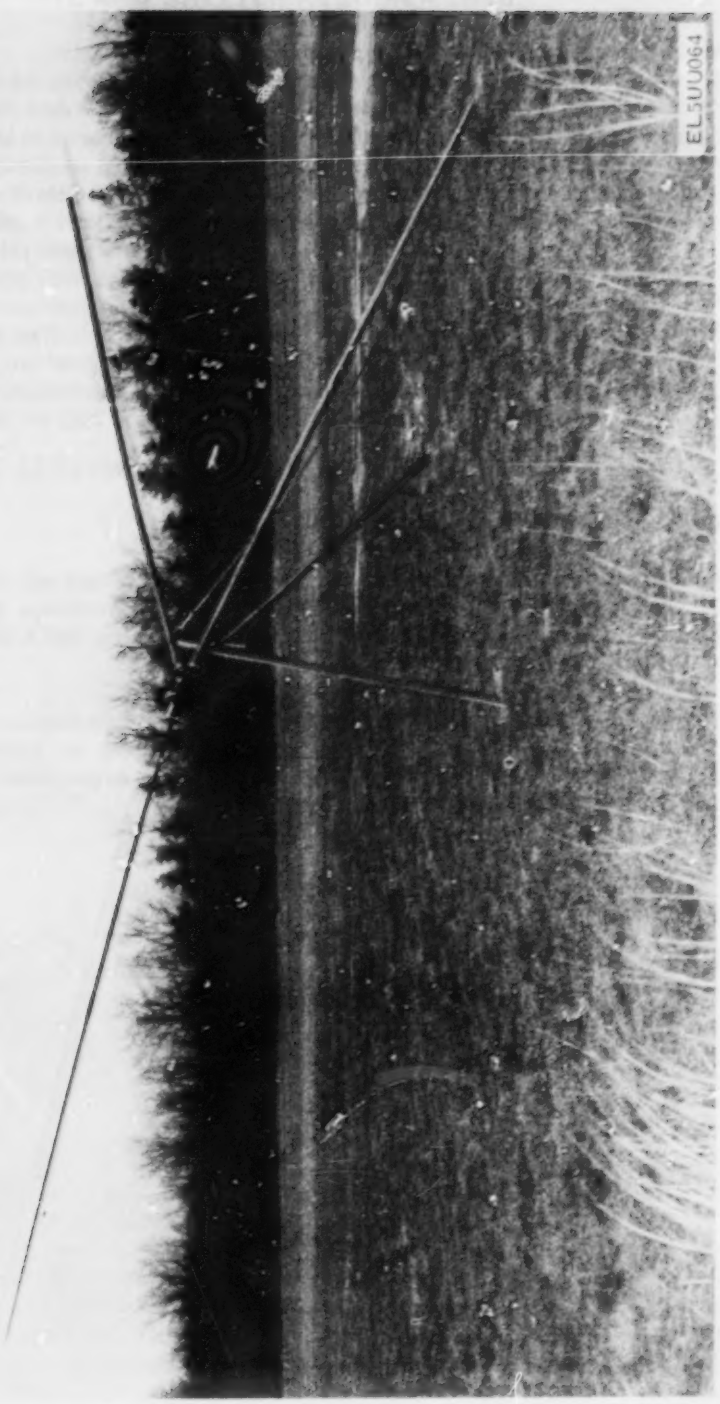

Figure 1-22. Antenna Tripod Positioned For Adjustment.

CHAPTER 2
INSTALLATION

Section I. SITE AND SHELTER REQUIREMENTS

2-1. Siting

Location of the FCC shelter depends on the tactical situation and use of the shelter in its assigned area. When installed on the ground, the shelter should be located on a site that is reasonably dry and level. Depressions (gullies, ravines, etc), valleys, and other low places are poor locations for radio reception and transmission. A cleared site, large enough for the FCC, the telescoping mast, and the power units, is required. The telescoping mast requires reasonably flat terrain in a circle of approximately 60-foot diameter. The cleared site should not be under or close to a steel bridge, underpass, powerlines, or interfering rf radiating equipment (diathermy, X-ray equipment, etc). Whenever possible, concrete blocks or wooden beams should be used as a foundation and the shelter positioned to facilitate connections to the power entrance and antenna entry panels. If the shelter is to remain truck-mounted, remove the ladder from the shelter and secure it to the truck tailgate. Position the shelter approximately 75 to 100 feet away from the power source to minimize generator noise interference.

2-2. Antenna Configurations

Installation of the FCC antenna system can be made by using the 50-foot telescoping mast or without the mast. The site layout, installation time, personnel, and forecast of FCC operational availability are all affected by the choice of configuration to be installed.

Section II. SERVICE UPON RECEIPT OF MATERIEL

2-3. Unloading Equipment

CAUTION

Be sure no hardware projects from the shelter during unloading and/or loading operations. Damage to the shelter may result. Close and secure all covers.

NOTE

Whenever any instructions herein conflict with information on data plates fastened on the shelter, instructions on the data plates should be used.

a. Unloading Shelter from Truck (figs. 2-1 and 2-2).

(1) Lower the truck tailgate.

(2) Release the locknuts (not shown) that secure the turnbuckles in place. Loosen the turnbuckles.

(3) Remove the sling assembly hooks from the tiedown ring assemblies.

(4) Remove the sling assembly hooks (those farthest from the turnbuckles) from the four shelter tiedown eyes.

(5) Remove the tiedown ring assemblies (part of the sling assembly) from the center of each cargo-bed siderail.

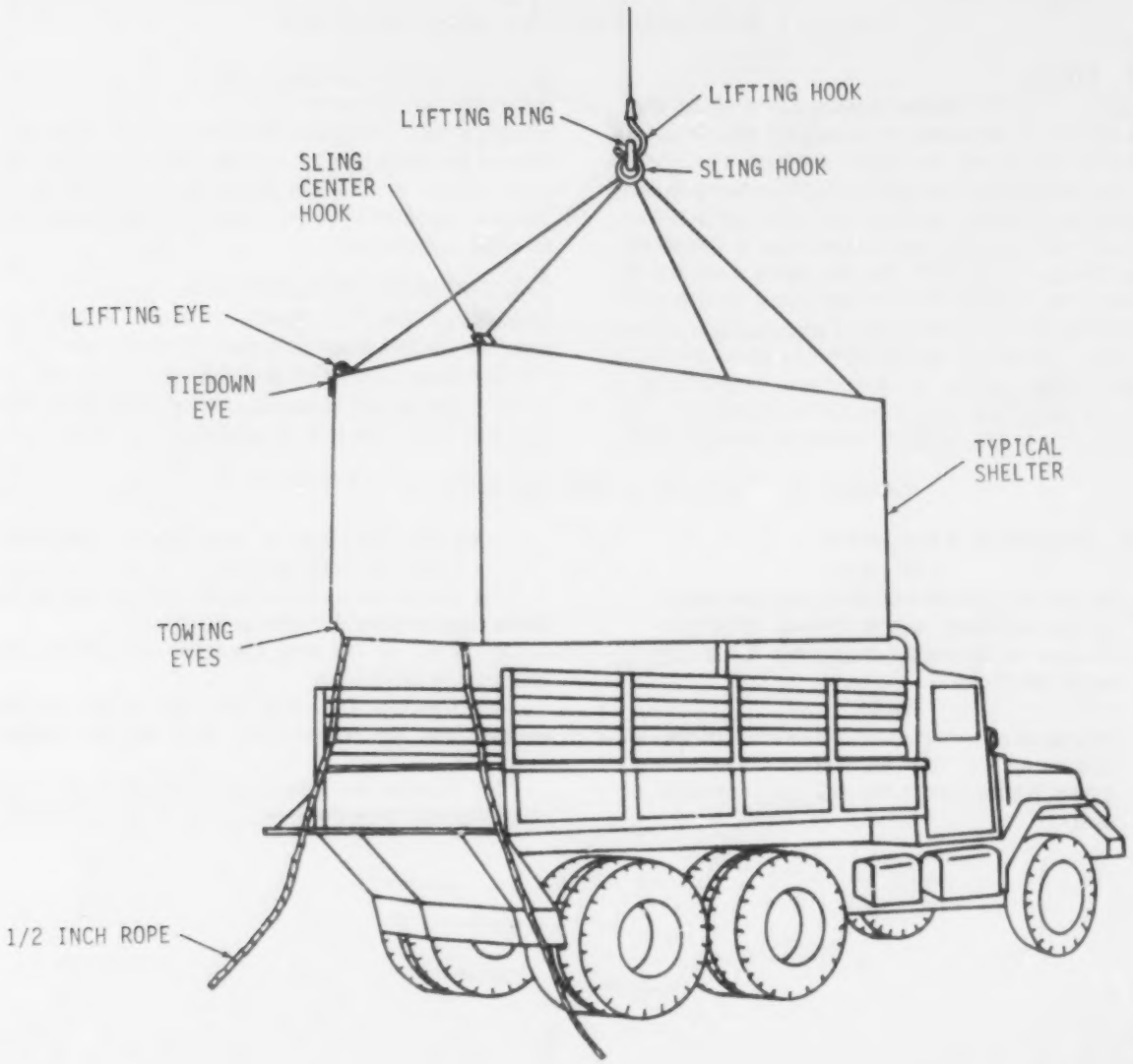

Figure 2-1. Loading or Unloading Shelter on Truck.

b. Lifting the Shelter (fig. 2-1).

NOTE

Some shelters have both a lifting eye and a tiedown eye. Other shelters have a single eye which serves as both a lifting eye and tiedown eye. Observe the caution below.

CAUTION

If the shelter to be moved has two eyes at each upper corner, be sure the sling assembly hooks are connected to the lifting eyes; damage to the shelter may result if the tiedown eyes are used for lifting. Use tiedown eyes for tiedown only.

(1) Connect the sling assembly sling center hooks (those nearest the turnbuckles) to the shelter lifting eyes.

(2) Place the other end of the sling assembly on the shelter roof.

(3) Connect the four sling assembly hooks to a lifting ring.

(4) Place the lifting ring over the hook of a lifting device.

WARNING

To avoid injury to personnel and damage to the

equipment, only personnel engaged in the actual lifting operation should be near the lifting device and shelter. To eliminate confusion, all instructions must come from the lifting crew supervisor.

(5) Tie a guide rope, one-half inch in diameter and a minimum of 15 feet long, to each rear towing eye of the shelter.

CAUTION

Observe the following cautions to avoid damage to the shelter:
Lift the shelter slowly.
Minimize sideways swinging of the shelter.
Do not bounce or jar the shelter when it is supported by the lifting eyes.
Do not butt the shelter into place with forklifts or similar moving equipment.

(6) Lift the shelter slowly and smoothly with a lifting device such as a crane or M-58 boom. Do not lift the shelter to unnecessary heights during removal from the truck.

(7) Lower the shelter slowly to the desired foundation (para 2-1).

(8) Remove the sling assembly and store it in the shelter.

(9) To relocate the shelter, follow the procedures in *c* below.

c. Securing Shelter to Truck.

(1) Install the tiedown ring assembly (part of the sling assembly) above the center support of each of the trucks's cargo-bed siderails (A, fig. 2-2).

(2) Lift the shelter from its foundation (*b*(1) through (6) above).

(3) Lower the truck tailgate, back the 2½ ton M-35 or M-211 truck under the shelter, and lower the shelter onto the body of the truck until the front of the shelter is positioned closely against the front of the truck body.

(4) Secure the sling assembly hooks farthest from the turnbuckles to each of the four shelter tiedown eyes.

(5) Secure the sling assembly hooks closest to the turnbuckles to the two tiedown ring assemblies (B, fig. 2-2).

NOTE

It may be necessary to insert wooden blocks (to act as spacers) between the sling assembly cables and the shelter, in each of the four corners of the shelter near the tiedown eyes, to prevent damage to air conditioner covers when the sling is secured.

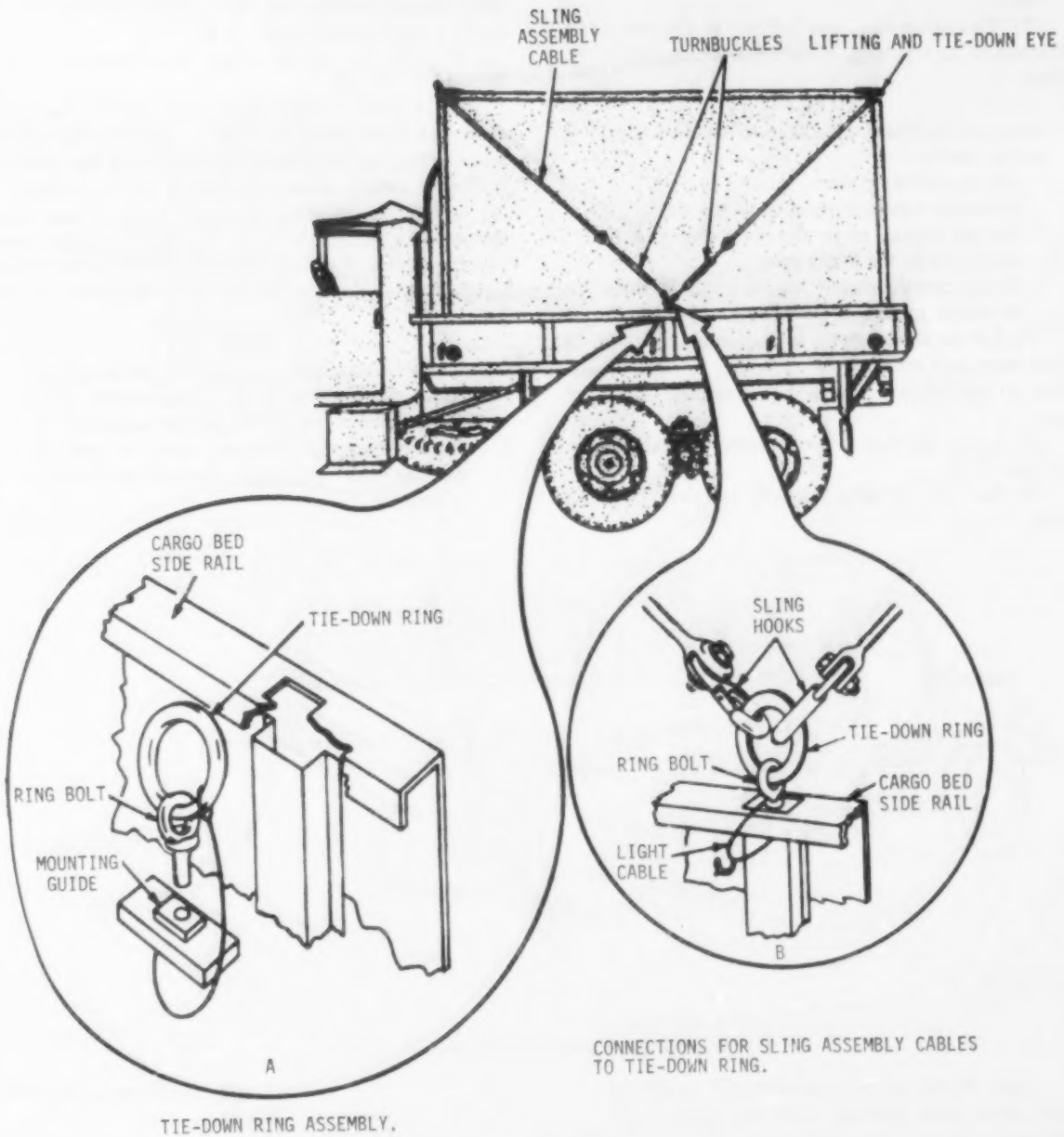

Figure 2-2. Securing Shelter on Truck.

Figure 2-3. Shelter Prepared for Transport (sheet 1 of 3).

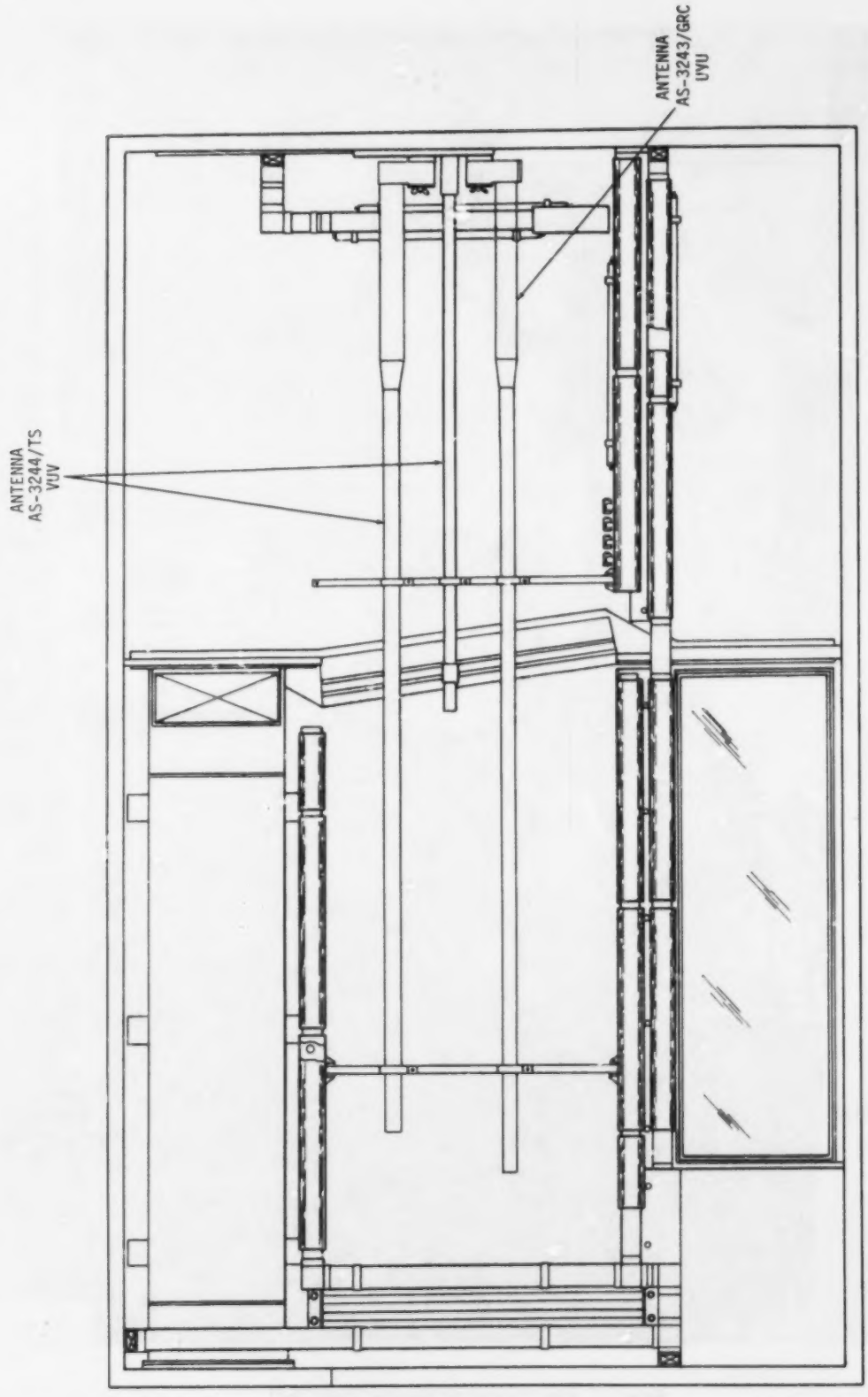

Figure 2-3. Shelter Prepared for Transport (sheet 2 of 3).

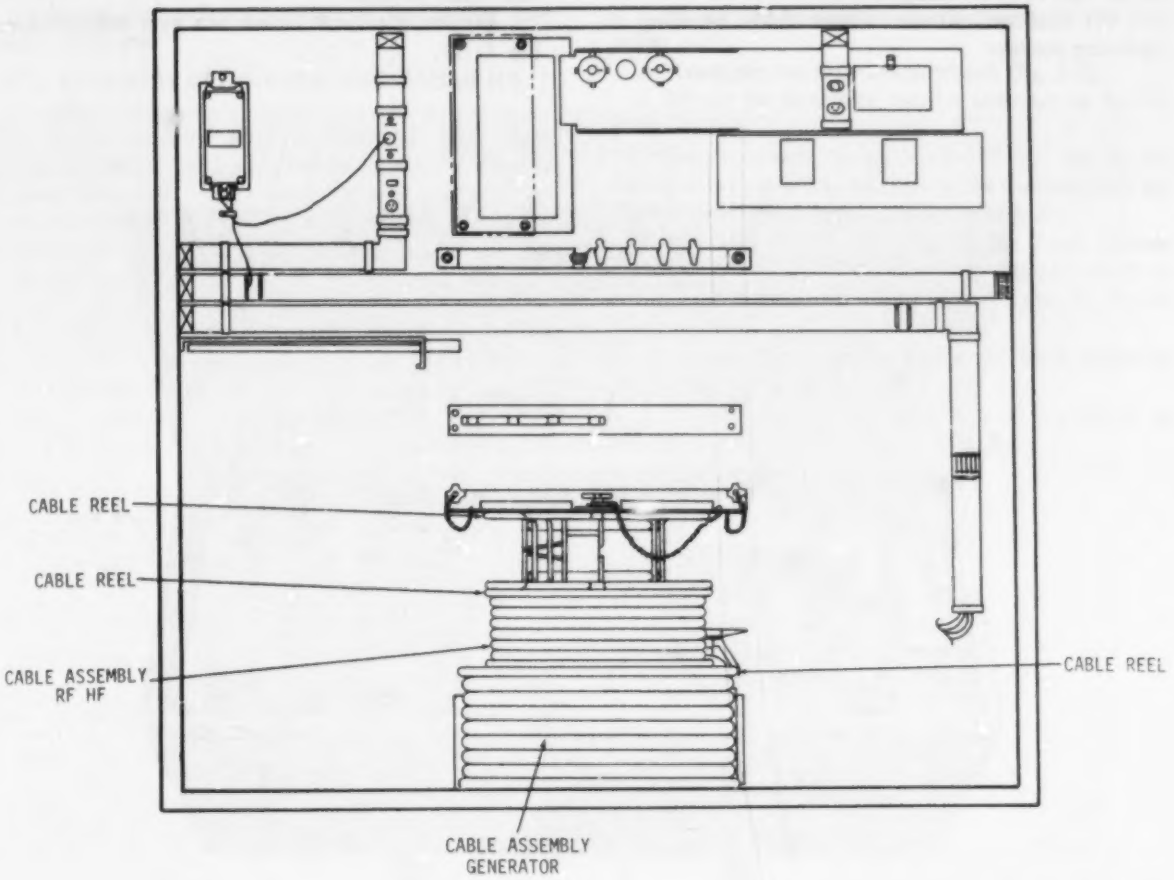

Figure 2-3. Shelter Prepared for Transport (sheet 3 of 3).

CAUTION

Do not tighten turnbuckles unevenly or excessively. Damage to the shelter may result.

(6) Tighten the four turnbuckles evenly by hand.

(7) Insert a bar or rod in the turnbuckles and turn each turnbuckle one additional half-turn.

(8) Raise and secure the truck tailgate.

2-4. Unpacking

(fig. 2-3)

a. Remove canvas bags from ladder and then remove two holddown brackets that secure ladder to antenna mast.

b. Secure ladder in position.

c. Remove the ceiling mounted UVU and VUV antennas.

(1) Loosen wingnut on front wall of shelter in base of antennas.

(2) Rotate lock plate to free antenna base.

(3) Free antennas from bracket, remove antennas and place on roof of shelter.

(4) Remove brackets from ceiling, press head of pin and pull while holding bracket.

d. Remove folding chair and plate section secured to antenna mast.

e. Remove holddown bracket by door on floor securing antenna mast.

f. Remove antenna mast and floor bracket that secures antenna mast.

NOTE

Group assemble all cables by length outside.

g. Remove cable reel brackets and remove cable reels.

h. Loosen rotary chairs and relocate equipment room.

i. Remove storage box (fig. 2-4) under operator's console; loosen 4 mounting lugs from side of box.

NOTE

Group assemble all cables by length outside.

j. Blower installation.

(1) Relocate exterior front upper middle vent cover to the right of its traveling position.

(2) Relocate exhaust blower from traveling to operating position.

(3) Remove exhaust blower box from secured workbench position.

(4) Install exhaust blower box over exhaust blower (fig. 1-11).

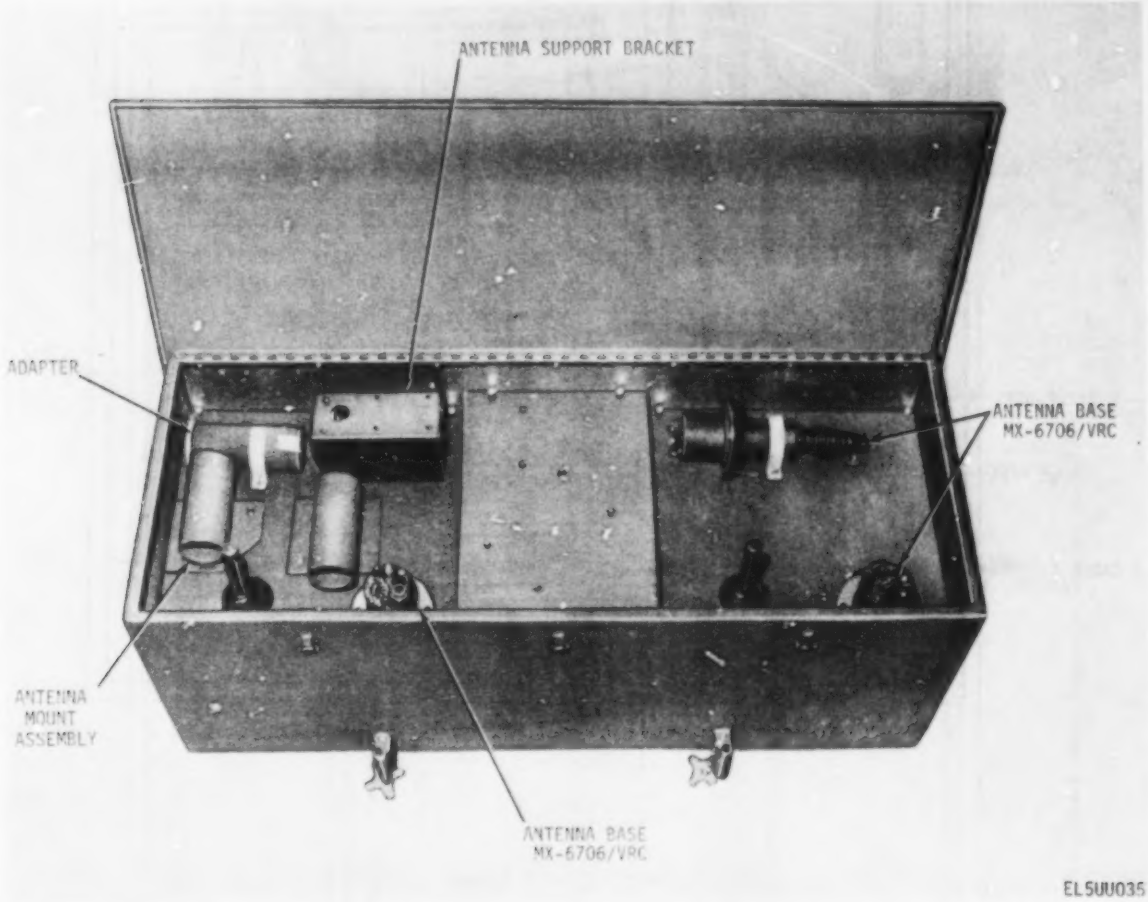

Figure 2-4. Storage Box Tripod and Antenna Components.

Section III. INSTALLATION INSTRUCTIONS

2-5. Tools and Test Equipment for Installation and Initial Adjustment

Item	*Purpose*	*Applicable Publication*
Tool Kit, Electronic Equipment TK-101/G.	General installation	SB 11-558
Multimeter AN/URM-105	General voltage and resistance check.	TM 11-6625-203-12

2-6. Setting Up Power Units

NOTE

After the power unit has been towed to the operating site and located as outlined in paragraph 2-1, set up the unit as in *a* through *h* below.

a. Unhook the safety chains from the towing vehicle and secure the chains to the tiedown loops on the trailer frame.

b. Close the shutoff valves on the airhoses at the rear of the towing vehicle.

c. Uncouple the airhoses and fit the dummy plugs into the airhoses on the towing vehicle.

d. Secure the trailer hoses to the dummy couplings on the trailer.

e. Disconnect the intervehicle cable from the towing vehicle receptacle.

f. Remove the clevis pin and drop the landing gear brace.

g. Remove the clevis pin and drop the landing gear into position.

h. Secure the landing gear brace to the landing gear with a clevis pin.

2-7. Assembly of Antenna Installation No. 1 (fig. 1-16)

The shelter mounted array is assembled from three mounting plates, one UVU antenna, one VUV antenna and one fm antenna. The remote antennas consist of one hf antenna mounted on the hf coupler case and two fm antennas mounted on tripods. All components and the necessary hardware are provided with the FCC. Refer to table 2-1 for components of antenna installation No. 1. When assembling the array, be sure to use the proper flat washer and lockwasher combination.

a. Assemble the three fm antennas by screwing an Element AT-1095/VRC into each element AS-1730/VRC (fig. 2-5). Screw the antenna elements into the antenna bases.

b. Attach fm antenna mount SC-D-889536 to the shelter using the six bolts (fig. 2-6).

c. Mount one fm antenna on the mount with the four bolts.

d. Assemble two fm antenna tripods (fig. 2-5).

e. Mount the remaining two fm antennas on the tripods.

f. Attach antenna mount SC-D-889535, one on the curbside rear top corner and one on the roadside front top corner, using the three bolts supplied (fig. 2-6).

g. Mount the VUV antenna on the front antenna mounting bracket by slipping the split ring portion of the clamp around the antenna and mount and then tighten the attaching bolt.

h. Mount the UVU antenna on the front mounting bracket as described in *g* above.

i. Mount the remaining hf antenna by screwing it on the base of the antenna coupler case (fig. 2-7).

j. Tighten all bolts and screws.

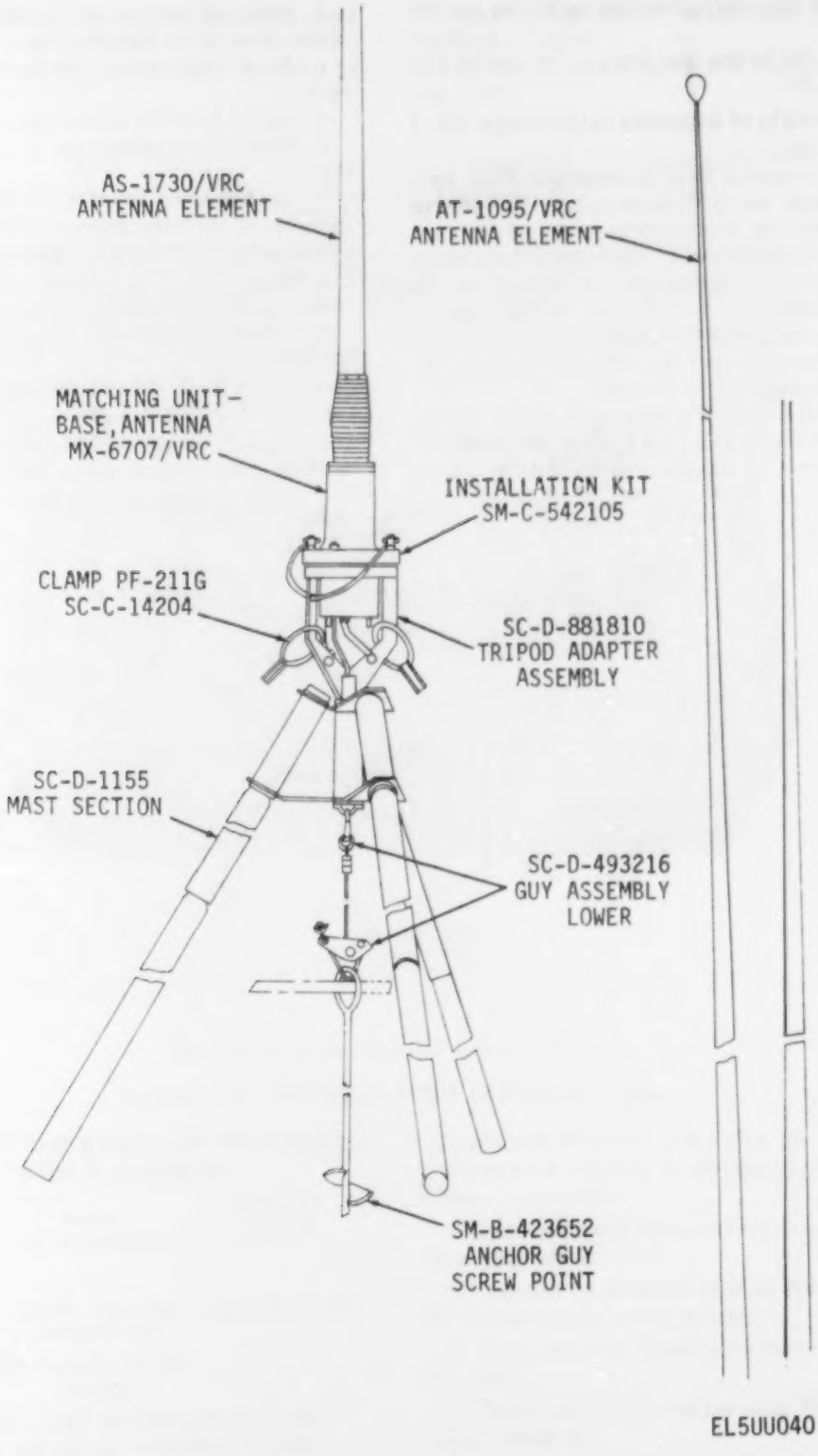

Figure 2-5. Components of FM Whip Antenna and Tripod.

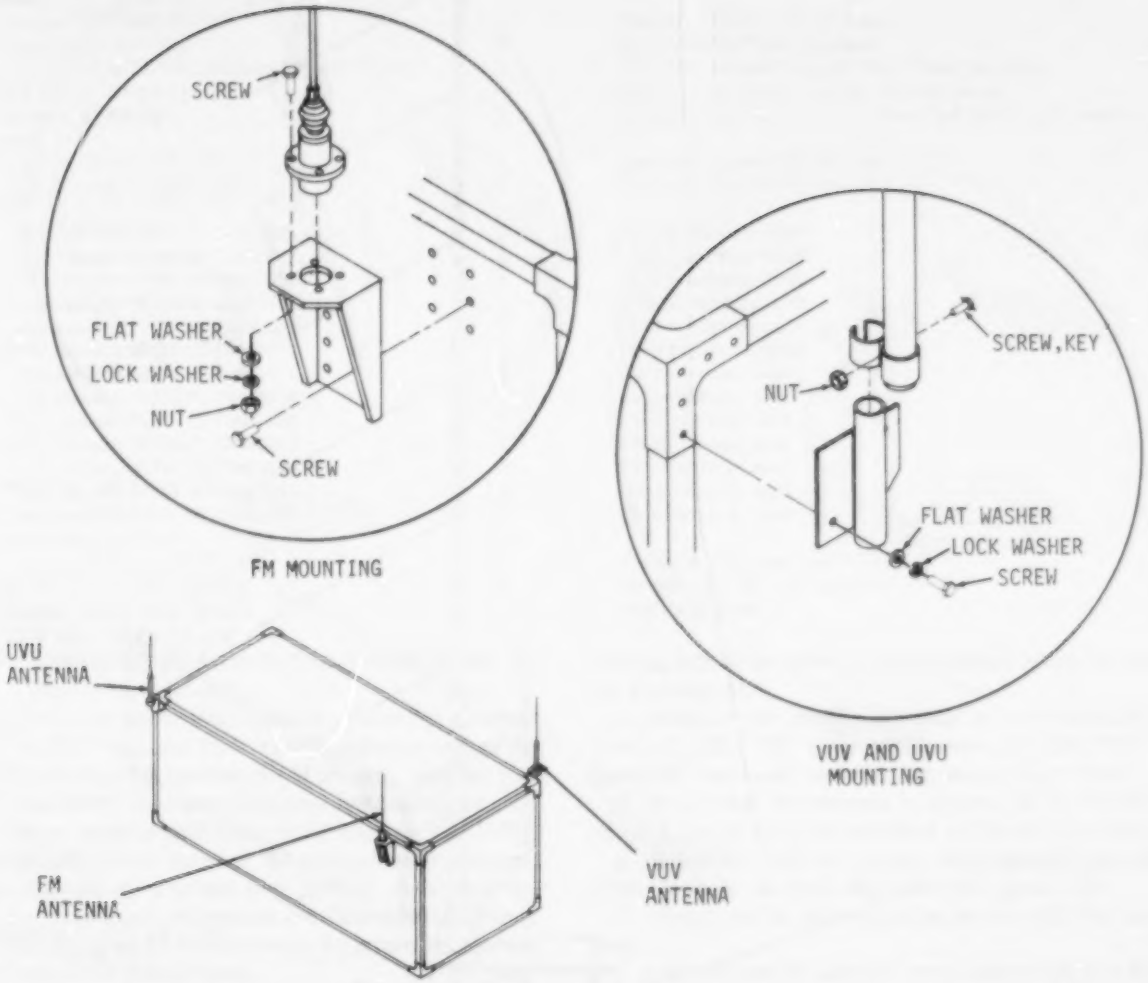

Figure 2-6. Shelter Array Mounting.

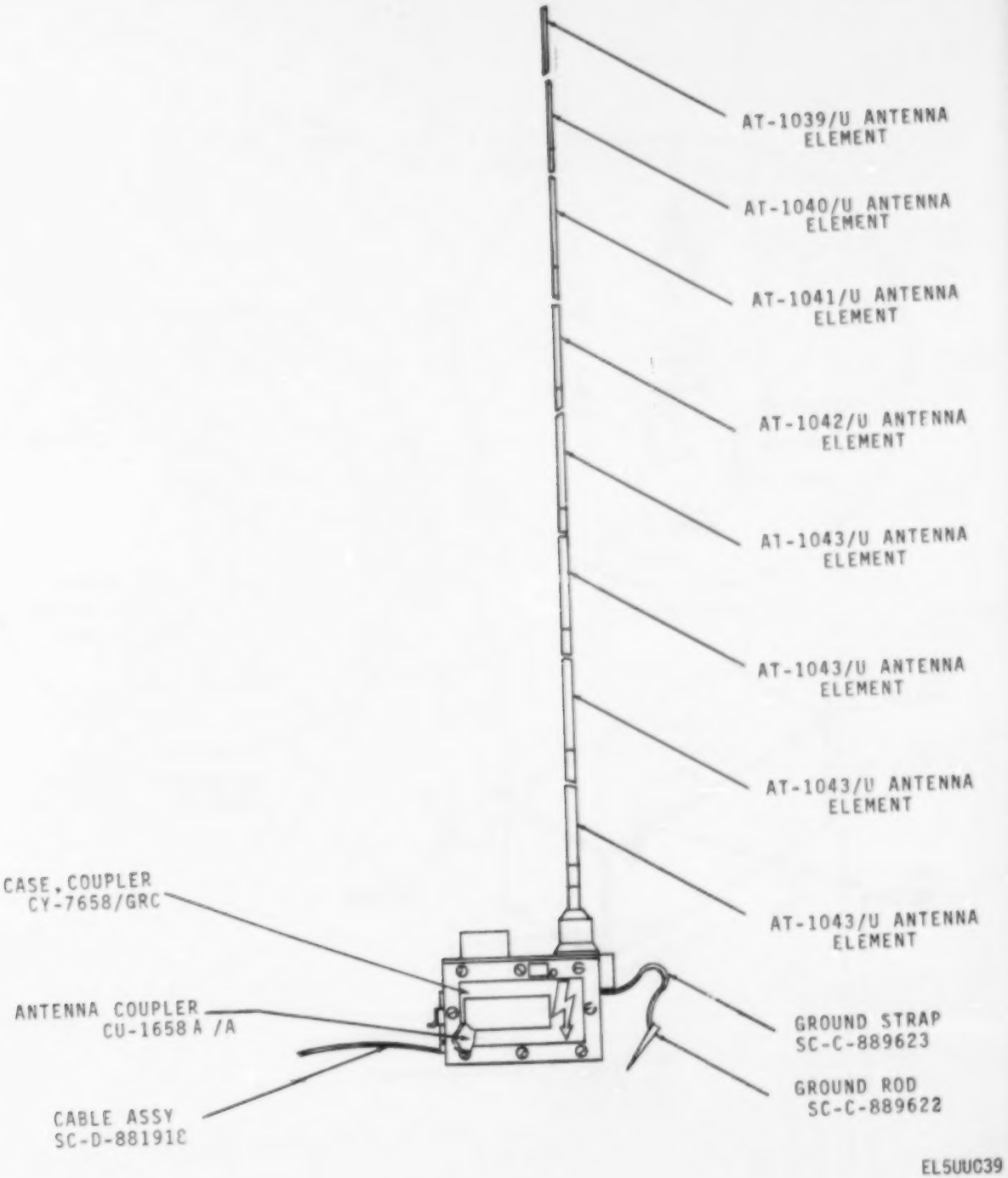

Figure 2-7. HF Antenna Components and Coupler Case.

k. An emergency hf long wire antenna can be installed as follows:

(1) Screw the long wire antenna adapter (fig. 1-21) on the antenna base of the hf coupler case (fig. 1-20).

(2) Insert the long wire antenna lead through the hole in the top of the long wire antenna adapter and tighten the cap to hold the antenna lead.

(3) Set the LOAD COIL switch on the hf coupler case to the OUT position.

Table 2-1. Antenna Installation No. 1 (figs. 1-16 and 1-17)

Item	*Quantity*	*Location*
Antennas:		
Antenna AS-3244/TS	1	Shelter—roadside front top corner.
Antenna AS-3243/GRC	1	Shelter—curbside rear top corner.
Antenna AS-1729/VRC (includes MX-6707/VRC).	3	Two tripod mounted—placed 50 feet from the shelter. One shelter mounted—curbside front top corner.
Antenna AT-1011/U	1	Mounted on top of coupler case placed 100 feet from the shelter.
Couplers:		
Antenna Coupler CU-1658A/A	1	Used with Antenna AT-1011/U.
Case, Coupler CY-7658/GRC	1	Used with Antenna AT-1011/U.
Cables:		
Cable assembly W507 SC-D-881915.	1	VUV to entrance panel.
Cable assembly W508 SC-D-882007.	1	VUV to entrance panel.
Cable assembly W509 SC-D-882008.	1	VUV to entrance panel.
Cable assembly W510 SC-D-881916.	1	UVU to entrance panel.
Cable assembly W511 SC-D-882009.	1	UVU to entrance panel.
Cable assembly W512 SC-D-882010.	1	UVU to entrance panel.
Cable assembly W504 SC-D-882014.	1	FM to entrance panel.
Cable assembly W518 SC-D-882014.	1	FM to entrance panel.
Cable assembly W517 SC-D-881906.	1	FM to entrance panel.
Cable assembly W505 SC-D-882013.	1	FM to entrance panel.
Cable assembly W516 SC-D-881908.	1	FM to entrance panel.
Cable assembly W503 SC-D-881917.	1	FM to entrance panel.
Cable assembly W501 SC-D-881918.	1	HF to entrance panel.
Tripods masts and mounts:		
Tripod, antenna AB-1256/GRC	2	Used with Antennas AS-1729/VRC.
Mount, antenna SC-D-889535	2	Mounts UVU and VUV antennas.
Mount, antenna SC-D-889536	1	Mounts fm antenna.

2-8. Assembly of Antenna Installation No. 2 (figs. 1-18 and 1-19)

The shelter-mounted array consists of one fm antenna and one VUV antenna. The remote antennas consist of an fm tripod mounted antenna, an hf antenna, and the 50-foot mast array. The telescoping mast antenna array is a T-bar design supplied with bolts, nuts, washers, one UVU antenna and one fm antenna. All components and necessary hardware are provided with the FCC. Refer to table 2-2 for components of antenna installation No. 2. When assembling the array, be sure to use the proper flat washer and lockwasher combination.

a. Attach the AB-720/G with mating adapter to the 50-foot antenna mast and tighten the attaching bolt (fig. 2-8).

b. Install adapter SC-D-881835 to one arm of the antenna support assembly and tighten the attaching bolt.

c. Mount the UVU antenna by slipping the split ring portion of the clamp around adapter SC-D-881835, then tighten the attaching bolt.

d. Attach adapter assembly SC-D-881815 in the remaining arm of the antenna support assembly and tighten the attaching bolt.

e. Assemble the three fm antennas by screwing an Element AT-1095/VRC into each Element AT-1096/VRC. Screw the assembled elements into the antenna bases.

f. Mount one fm antenna in adapter SC-D-881815 which is part of the array mounted on the 50-foot mast.

g. Attach fm antenna mount SC-D-889536 to the shelter with the six bolts (fig. 2-6).

h. Mount one fm antenna on the mount with the four bolts.

i. Assemble one fm antenna tripod and mount one fm antenna on the tripod (fig. 2-5).

j. Attach antenna mount SC-D-889535 to the roadside front top corner of the shelter with the three bolts (fig. 2-6).

k. Mount the VUV antenna on the mounting bracket.

l. Mount the remaining hf antenna by screwing it on the base provided on the hf antenna coupler case.

m. Tighten all bolts and screws.

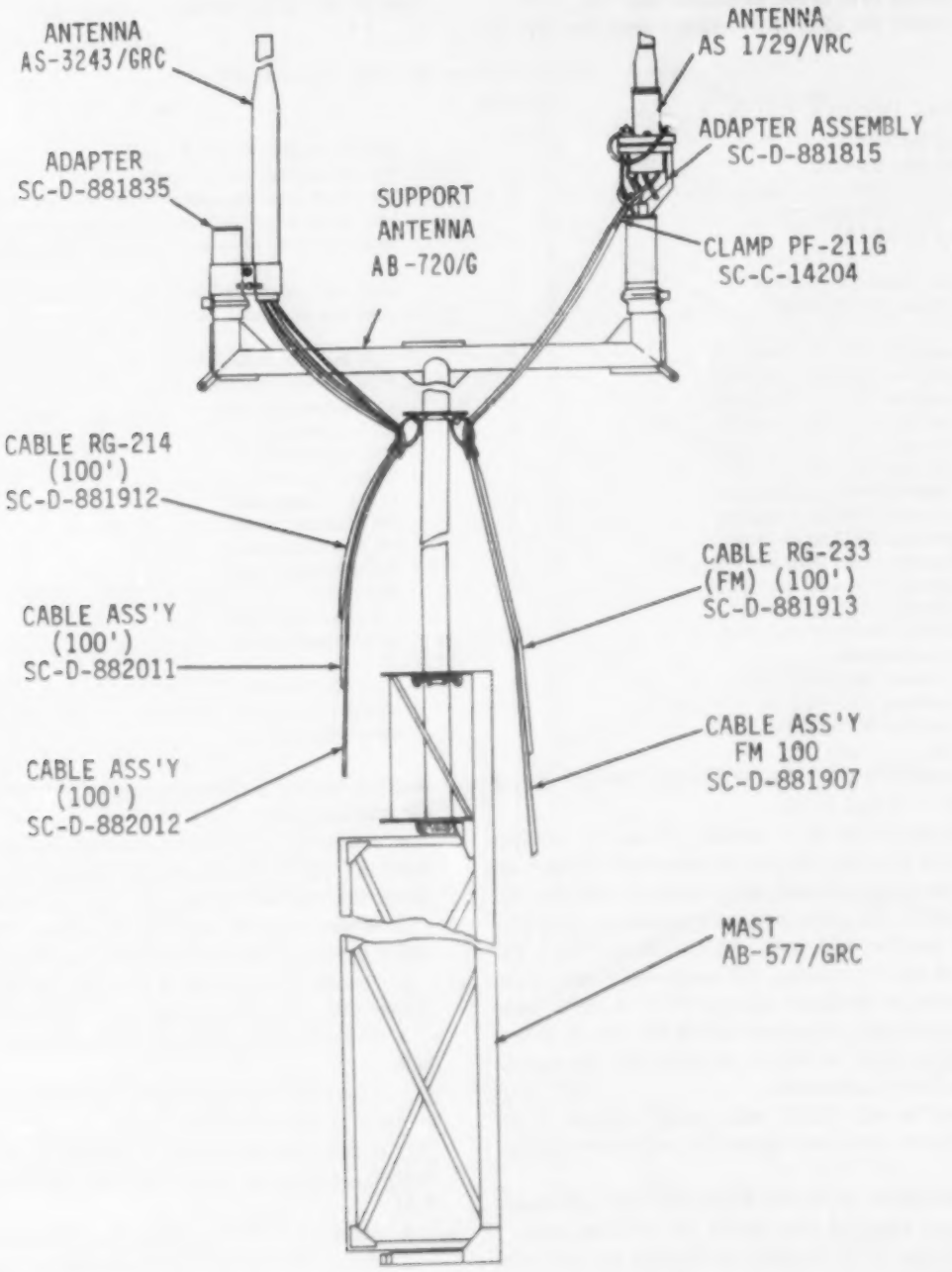

Figure 2-8. Telescoping Mast with Antenna Array.

Table 2-2. Antenna Installation No. 2 (figs. 1-18 and 1-19)

Item	Quantity	Location
Antennas:		
Antenna AS-3244/TS	1	Shelter—Roadside front top corner.
Antenna AS-3243/GRC	1	Mounted on top of telescoping Mast, Antenna AB-577/GRC.
Antenna AS-1729/VRC (includes MX-6707/VRC).	3	One shelter mounted curbside front top corner. One tripod mounted 50 feet from the shelter. One mounted on top of 50-foot telescoping mast.
Antenna AT-1011/U	1	Mounted on top of coupler case placed 100 feet from the shelter.
Couplers:		
Antenna Coupler CU-1658A/A	1	Used with Antenna AT-1011/U.
Case, Coupler CY-7658/GRC	1	Used with Antenna AT-1011/U.
Cables:		
Cable assembly, W507 SC-D-881915.	1	VUV to entrance panel.
Cable assembly, W508 SC-D-882007.	1	VUV to entrance panel.
Cable assembly, W509 SC-D-882008.	1	VUV to entrance panel.
Cable assembly, W513 SC-D-881912.	1	UVU to entrance panel.
Cable assembly, W514 SC-D-882011.	1	UVU to entrance panel.
Cable assembly, W515 SC-D-882012.	1	UVU to entrance panel.
Cable assembly, W506 SC-D-881913.	1	Fm to entrance panel.
Cable assembly, W519 SC-D-881907.	1	Fm to entrance panel.
Cable assembly, W517 SC-D-881906.	1	Fm to entrance panel.
Cable assembly, W516 SC-D-881908.	1	Fm to entrance panel.
Cable assembly, W503 SC-D-881917.	1	Fm to entrance panel.
Cable assembly, W501 SC-D-881918.	1	Hf to entrance panel.
Tripods masts and mounts:		
Tripod, antenna AB-1256/GRC	1	Used with Antenna AS-1729/VRC.
Mast, antenna AB-577/GRC	1	Mounts UVU and fm antennas 50 feet from shelter.
Mount, antenna SC-D-889535	1	Mounts VUV antenna.

2-9. Erection of Telescoping Mast

NOTE

Refer to TM 11-5820-538-12 for complete data on the mast.

a. Move the combination base and carrying case (fig. 2-3) within approximately 50 feet of the shelter.

b. Loosen the three wingscrews on the carrying case coverplate and remove the coverplate.

CAUTION

Be careful not to allow the base legs to fall.

c. Unfold the base legs carefully and lay them flat on the ground with the guy stowage reels up.

d. Remove the three tubular struts from the coverplate.

e. Insert the base of the antenna array assembly, together with the mast adapter, into the top tube of the mast.

f. Insert the three upper guy hooks into the upper guy adapter welded on the mast adapter. The upper guys are color coded red (either on their hooks or stowage reels).

g. Place the mast on the center of the base and rotate the mast until the key in the base tube engages the slot in the locating hub. Inspect the pulleys and brackets to be sure that the lift cables are not jammed in the pulley housings.

h. While one or two persons steady the mast in a vertical position, attach the upper ends of the tubular struts to the mast base. (The points are labeled ATTACH STRUTS HERE.) Use the locking pins provided.

i. Loosen and position the slideplates in the base legs and install the locking pins in the lower end of the struts. When the mast is vertical and the base legs are completely flat on the ground, lock the slideplates in position.

j. Use the 30-foot guy locator cable (included for measuring purposes only) to find the proper locations for the ground anchors.

(1) Hold one end of the locator cable against the mast.

(2) Extend the cable in direct line with the center of one base leg.

(3) Stretch the cable taut. The outer end of the cable has now located the point of installation of an arrowhead anchor.

k. Insert the arrowhead into the drive rod. Position the arrow so that the cable extends towards the mast base. Drive the rod into the ground vertically until the ring attached to the arrowhead is at ground level.

l. Hook the turnbuckle of the lower guy (color-coded green on the cable and/or the reels) into the pad at the upper end of the base tube. Attach the snubit on the other end of the cable to the anchor ring.

m. Repeat the procedures in *j* through *l* above until all three anchors and lower guys are installed.

n. Pull each cable through the snubit until the tension is approximately equal on all three guys. Lock the snubits by turning the wingscrew against the pin.

o. Adjust the lower guy turnbuckles so that the mast is vertical and the three guys have firm, equal tension.

p. Place the griphoist onto the mast mounting pad so that the keyhole slots in the griphoist mounting plate seat on the pins of the mast mounting pad.

CAUTION

Be sure that the pins are seated properly in the slots in the mounting plate. Insert the safety pin in the hole located above the top mounting pin.

q. Disengage the griphoist by pulling the clutch handle down to the lowest (detent) position. Feed the wire rope manually into the bushing and pull through the bottom of the griphoist until no slack remains.

r. Engage the griphoist clutch by moving the clutch handle to the up position.

s. Attach the hooks on the middle lifting guys to the thimbles on the main running guys. (The middle lifting guys, their reels and/or attachment points are color-coded blue.)

t. Slide the handle onto the griphoist lever.

u. Crank the griphoist until the topmost marking appears on mast section No. 2. A series of four dots, an arrow, and marking "ATTACH MID GUYS" appear before the line "OA-482/TRC" appears.

v. Attach the snubit on each middle lifting guy to its associated anchor ring. Adjust tension on each guy as described for the lower guys in *n* above.

w. Continue cranking until the bottom line appears on mast section No. 2. The mast is now extended 50 feet. Slowly crank until the mast lock engages. Insert the lock pin into the locking point in the base section and lower the mast until it rests on the lockpin.

x. Attach the upper guy snubits to the associated anchor rings and draw up the cables until tension is equal on all three guys. Be careful throughout this operation to maintain the upper portion of the mast vertical. Lock the snubits with the thumbscrews.

y. Connect the rf cables from the antennas to the associated connectors at the antenna entry panel. The rf cables should be kept off the ground and strain on connectors should be relieved by supporting the cables. Connect the fm control cables the same way.

z. To avoid a hazard to personnel moving about the FCC and antenna area, attach white engineer tape (1-inch wide) at several points along the lowest guy wires to at least head-height.

2-10. Internal Connections

All connections (signal and power) within the shelter are complete in the shelter as received. However, be sure to perform the following procedures before making any external connections (paragraph 2-11).

a. Check all power cords and connectors to see that they are secure and plugged into their respective outlets.

b. Check the condition of all exposed cables.

c. Move all circuit breaker switches in the ac circuit breaker panel (fig. 1-8) to OFF.

2-11. External Connections

a. Power Unit to Shelter

(1) Perform the initial setup procedures. (Refer to the technical manual covering the power units (appendix A)).

WARNING

Do not start the power units until all connections are made and appropriate safety precautions taken. Installing personnel may be exposed to 208 volts ac.

(2) Be sure that the patch board on the power unit (fig. 2-9) is connected for 120/208 volt operation, as explained in manual TM 5-6115-201-20.

(3) Connect one of the 100-foot power cables between the output connector of the power unit and POWER IN receptacle in the power entrance panel (figs. 1-15 and 2-9).

(4) Arrange each power unit for an output of 208 volts, 60 Hz ac as indicated in the power unit technical manual.

(5) Drive a ground rod (for each power unit) into the ground and connect to the ground stud of the power unit with a ground strap.

(6) Drive a ground rod into the ground, near the power entrance panel and connect to the GROUND TERMINAL with a ground strap.

b. Antenna Cables. Connect the antenna cables (figs. 1-17 or 1-19) to the antenna entrance panels as described in paragraphs 2-7 and 2-8. Be sure to secure all the antenna cables so that they will not place any undue strain on the antennas or on the antenna entry panel connections. Provide a drip loop to prevent water from affecting the connectors.

c. Telephone Lines. Connect the telephone lines to the telephone entrance panel (figs. 1-4 and 3-8) as follows:

(1) Connect the 15 pairs of telephone lines to binding posts pairs 1 through 15.

(2) Secure the cables to the cable guide ring to prevent undue strain on the binding posts; provide a drip loop.

(3) Connect the ground stud to a ground rod.

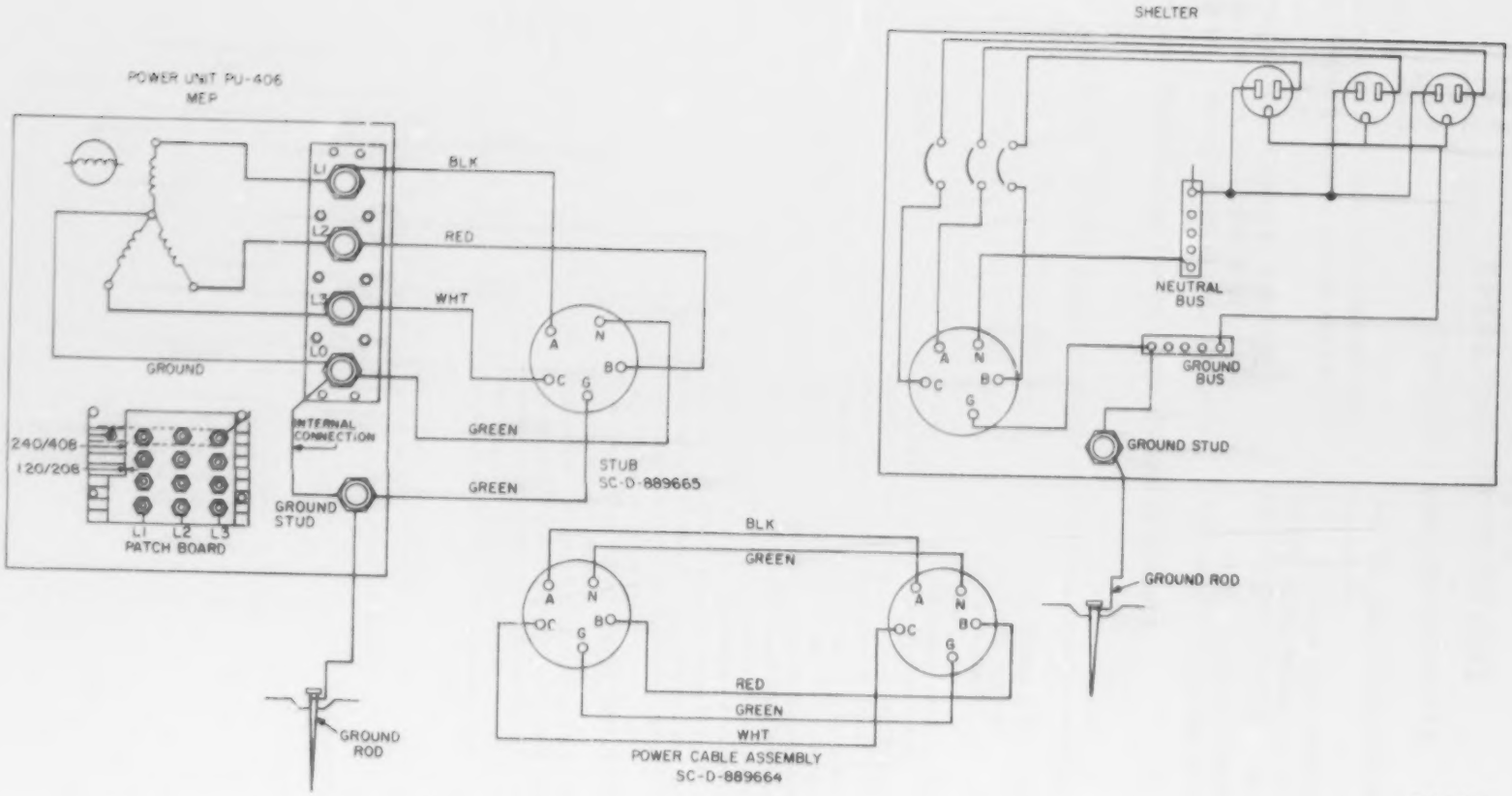

Figure 2-9. Power Unit Connections to Shelter

CHAPTER 3
OPERATING INSTRUCTIONS

Section I. CONTROLS AND INSTRUMENTS

3-1. General

This section describes the functions of equipment operating controls, indicators and jacks used by operating personnel.

3-2. Damage from Improper Settings

The following operating precautions must be observed during operation of the equipment to avoid damage to both the operated equipment and the associated peripheral equipment.

a. At the ac power distribution panel, never set the MAIN circuit breaker to ON unless the PHASE SEQUENCE INDICATOR is lighted.

b. At the operator's console, never key the hf radio while the TUNE indicator is lighted.

3-3. AC Power Distribution Panel, Controls and Indicators

(fig. 3-1)

Control or indicator	*Function*
VOLT/FREQUENCY PHASE MONITOR (4-position rotating switch).	Selects phases for frequency and voltage measurement.
	ØA ..... Selects phase A for measurement on the frequency meter and ac voltmeter.
	ØB ..... Selects phase B.
	ØC ..... Selects phase C.
	OFF ..... Disconnects circuits to frequency meter and ac voltmeter.
PHASE SEQUENCE INDICATOR	Indicator light is on when phase sequence is A-B-C.
AC VOLTS meter	Indicates ac voltage of phase selected by VOLT/FREQ. PHASE MONITOR switch.
FREQUENCY meter	Indicates frequency of phase selected by VOLT/FREQ. PHASE MONITOR switch.
LIGHTS lamp	When lighted, indicates power is applied to lights circuit.
BLOWER lamp	When lighted, indicates power is applied to blower circuit.
PS-1 lamp	When lighted, indicates power is applied to power supply No. 1.
PS-2 lamp	When lighted, indicates power is applied to power supply No. 2.
CONV lamp	When lighted, indicates power is applied to convenience outlets.
MAIN circuit breaker	Three-ganged, 570-ampere circuit breaker which provides control and overload protection for the ac power source and controls ac power to the individual circuit breakers.
MAIN lamp	When lighted, indicates power is applied to shelter main circuit.
PS-1 circuit breaker	Three-ganged, 30-ampere circuit breaker which provides control and overload protection for dc power supply PS1.
PS-2 circuit breaker	Three-ganged, 30-ampere circuit breaker which provides control and overload protection for dc power supply PS2.
LIGHTS circuit breaker	Single-ganged, 15-ampere circuit breaker for interior lighting circuits.
BLOWER circuit breaker	Single-ganged, 15-ampere circuit breaker for blower circuit.
CONV circuit breaker	Single-ganged, 20-ampere circuit breaker for interior convenience outlets.
CONV circuit breaker	Single-ganged, 15-ampere circuit breaker for interior convenience outlets.
REMOTE AIR COND. circuit breaker.	1-ampere circuit breaker for air conditioner voltage sensing circuit.

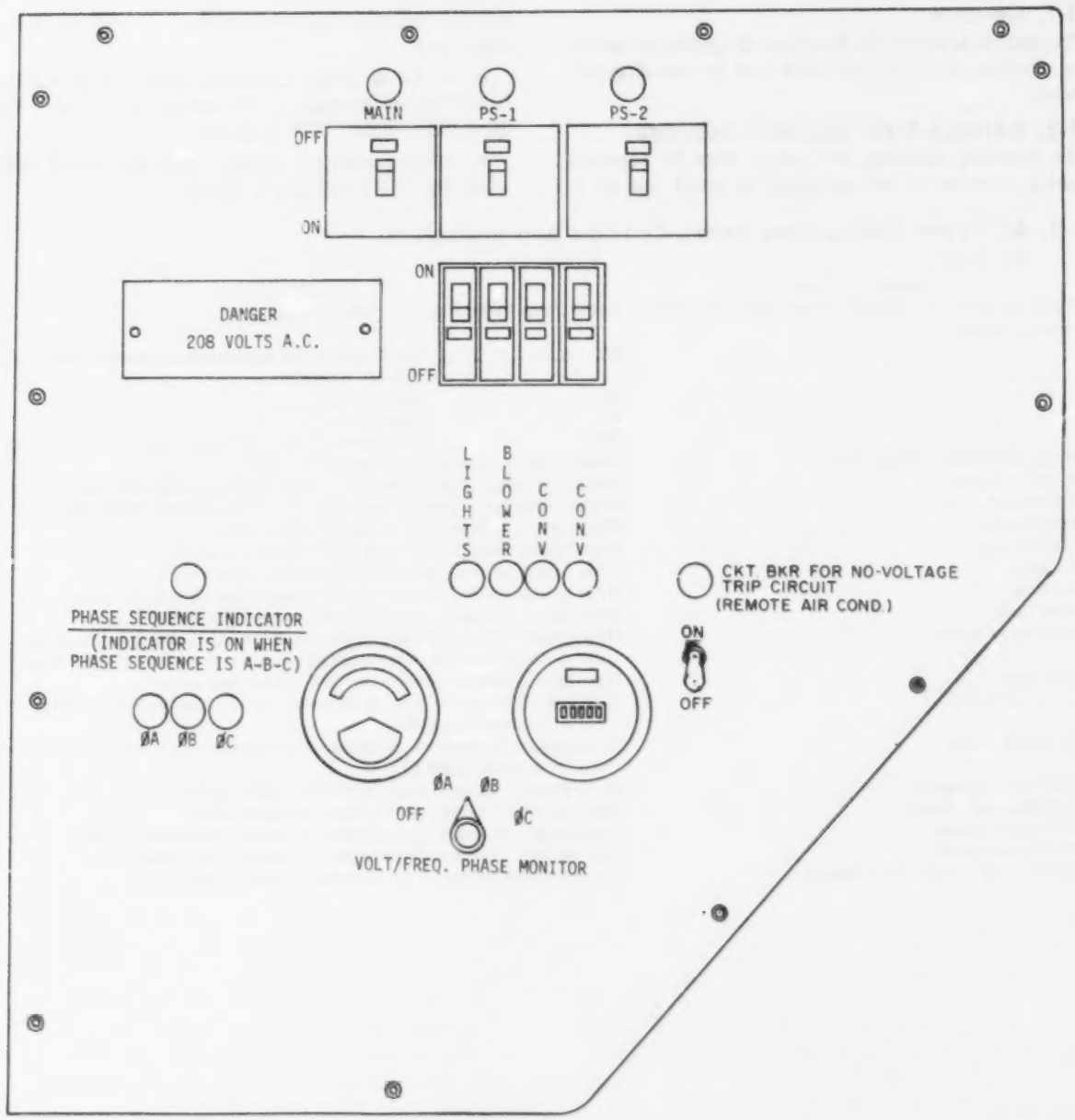

Figure 3-1. AC Power Distribution Panel.

3-4. Power Entrance Panel Controls and Connectors
(fig. 1-15)

Control or Connection	*Function*
POWER IN 120/208 VAC 50/60 Hz 3Ø connector.	Connection point for 120/208 vac, 50/60 Hz, 3 phase power to shelter.
POWER OUT AIR CONDITIONER 208 VAC 50/60 Hz connector.	Connection point for 208 vac, 50/60 Hz power to air conditioner.
AIR CONDITIONER CIRCUIT BREAKER	20-ampere circuit breaker that provides control and overload protection for the air conditioner.
GROUND TERMINAL	Connection point for grounding lead for shelter.

3-5. DC Power Supply, Controls and Indicators
(fig. 3-2)

Control and Indicator	*Function*
START button	Starting control; must be held *in* until operating fan speed is reached.
STOP button	Stopping control; momentarily pressed *in* to shut unit off.
D.C. VOLTAGE ADJUST (potentiometer)	Adjusts output voltage. Turn in clockwise direction to increase output voltage; turn in counterclockwise direction to reduce output voltage.
VOLTS DC meter	Indicates output voltage.
AMPERES DC meter	Indicates current being drawn by load.

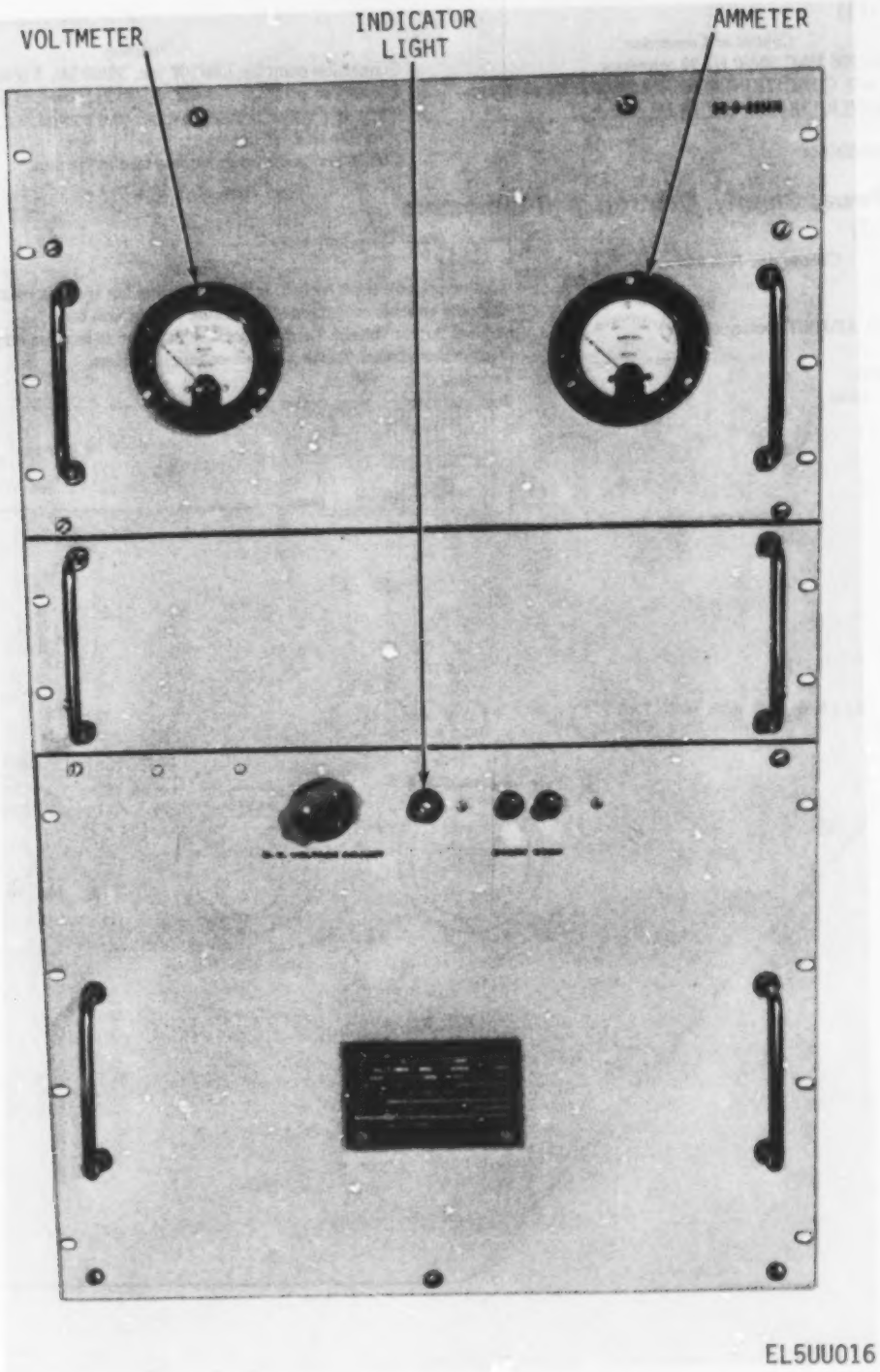

Figure 3-2. DC Power Supply.

3-6. DC Power Supply Control, Controls and Indicators
(fig. 3-3)

Control or Indicator	*Function*
PS1-AUTO-PS2 switch	Controls dc power supply application. PS1..... Power supply No. 1 supplies 28 volts dc to all circuits. PS2..... Power supply No. 2 supplies 28 volts dc to all circuits. AUTO ..... Power supply No. 1 will serve signal and radio outputs only and power supply No. 2 supplies hf radio output only. If either power supply fails, the operative power supply will supply 28 volts dc to all circuits. For normal operation, the control switch should be in the AUTO position.
POWER SUPPLY 1 lamp	When lighted, indicates that power supply No. 1 is operative.
POWER SUPPLY 2 lamp	When lighted, indicates that power supply No. 2 is operative.
SIGNAL & RADIO lamp	When lighted, indicates that 28 volts dc is applied to audio control box, radio circuit breaker panel, and 28 VOLTS DC OUT connector at the power entrance panel.
HF RADIO lamp	When lighted, indicates that 28 volts dc is applied to circuit breakers for the hf radio set.

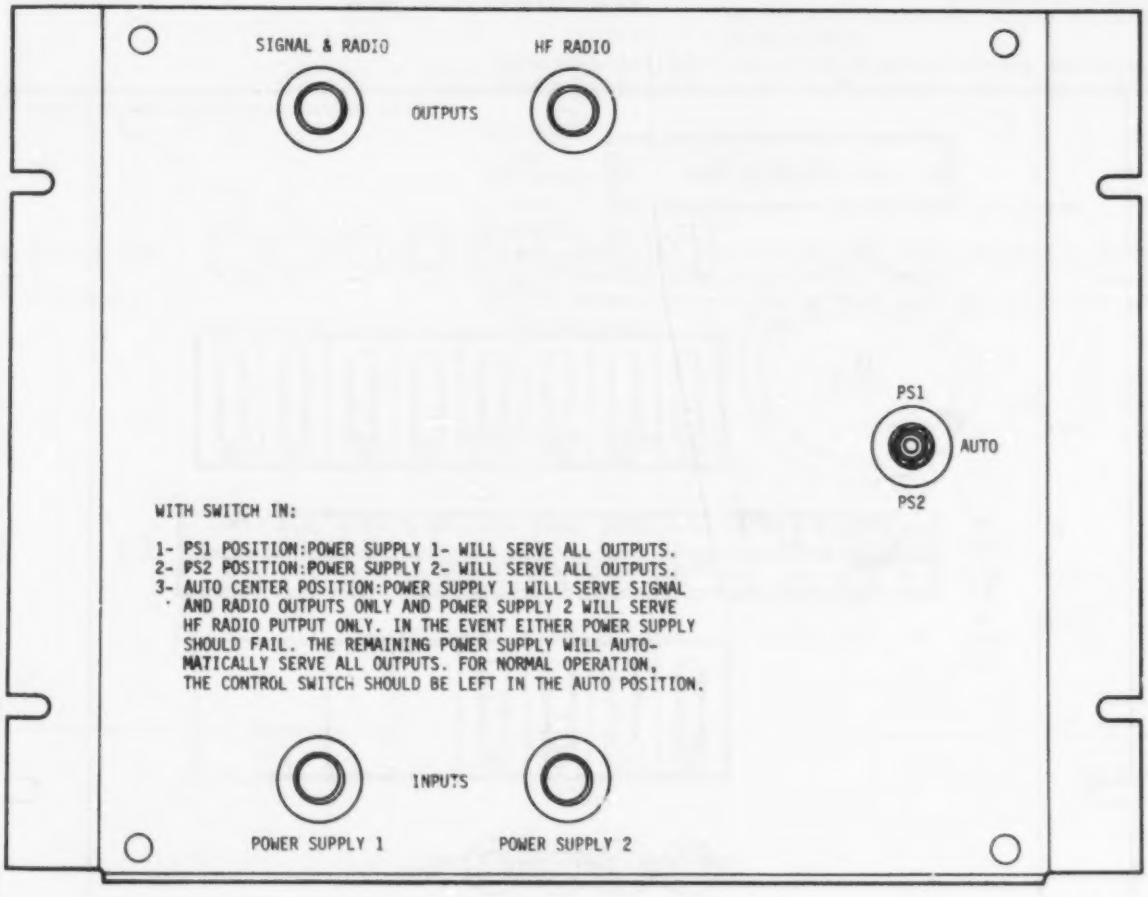
SIGNAL & RADIO
HF RADIO
OUTPUTS
PS1
AUTO
PS2
WITH SWITCH IN:
1- PS1 POSITION:POWER SUPPLY 1- WILL SERVE ALL OUTPUTS.
2- PS2 POSITION:POWER SUPPLY 2- WILL SERVE ALL OUTPUTS.
3- AUTO CENTER POSITION:POWER SUPPLY 1 WILL SERVE SIGNAL AND RADIO OUTPUTS ONLY AND POWER SUPPLY 2 WILL SERVE HF RADIO PUTPUT ONLY. IN THE EVENT EITHER POWER SUPPLY SHOULD FAIL. THE REMAINING POWER SUPPLY WILL AUTOMATICALLY SERVE ALL OUTPUTS. FOR NORMAL OPERATION, THE CONTROL SWITCH SHOULD BE LEFT IN THE AUTO POSITION.
INPUTS
POWER SUPPLY 1
POWER SUPPLY 2
EL5UU042

Figure 3-3. DC Power Supply Controls.

3-7. DC Power Distribution Panel, Controls and Indicators

(fig. 3-4)

Control or Indicator	*Function*
UHF-1 circuit breaker	Controls and protects UHF 1 circuit.
UHF-2 circuit breaker	Controls and protects UHF 2 circuit.
UHF-3 circuit breaker	Controls and protects UHF 3 circuit.
VHF-1 circuit breaker	Controls and protects VHF 1 circuit.
VHF-2 circuit breaker	Controls and protects VHF 2 circuit.
VHF-3 circuit breaker	Controls and protects VHF 3 circuit.
FM-1 circuit breaker	Controls and protects FM 1 circuit.
FM-2 circuit breaker	Controls and protects FM 2 circuit.
FM-3 circuit breaker	Controls and protects FM 3 circuit.
Circuit breaker indicators	When lighted, indicate that corresponding circuit breaker is on and 28 vdc is applied to circuit.
KY-8 circuit breaker	Controls and protects KY-8 circuit.
ARC-102 circuit breaker	Controls and protects AN/ARC-102 circuit.
ARC-102 RECEIVER circuit breaker	Controls and protects AN/ARC-102 antenna coupler circuit.
HF BUS SIG & RADIO BUS switch	In HF position selects HF radio circuits for monitoring by dc voltmeter. In SIG & RADIO BUS position monitors other radio circuits on dc voltmeter.
D.C. VOLTS meter	Indicates dc voltage to HF radio circuits or other radio circuits depending on setting of HF BUS SIG & RADIO BUS switch.

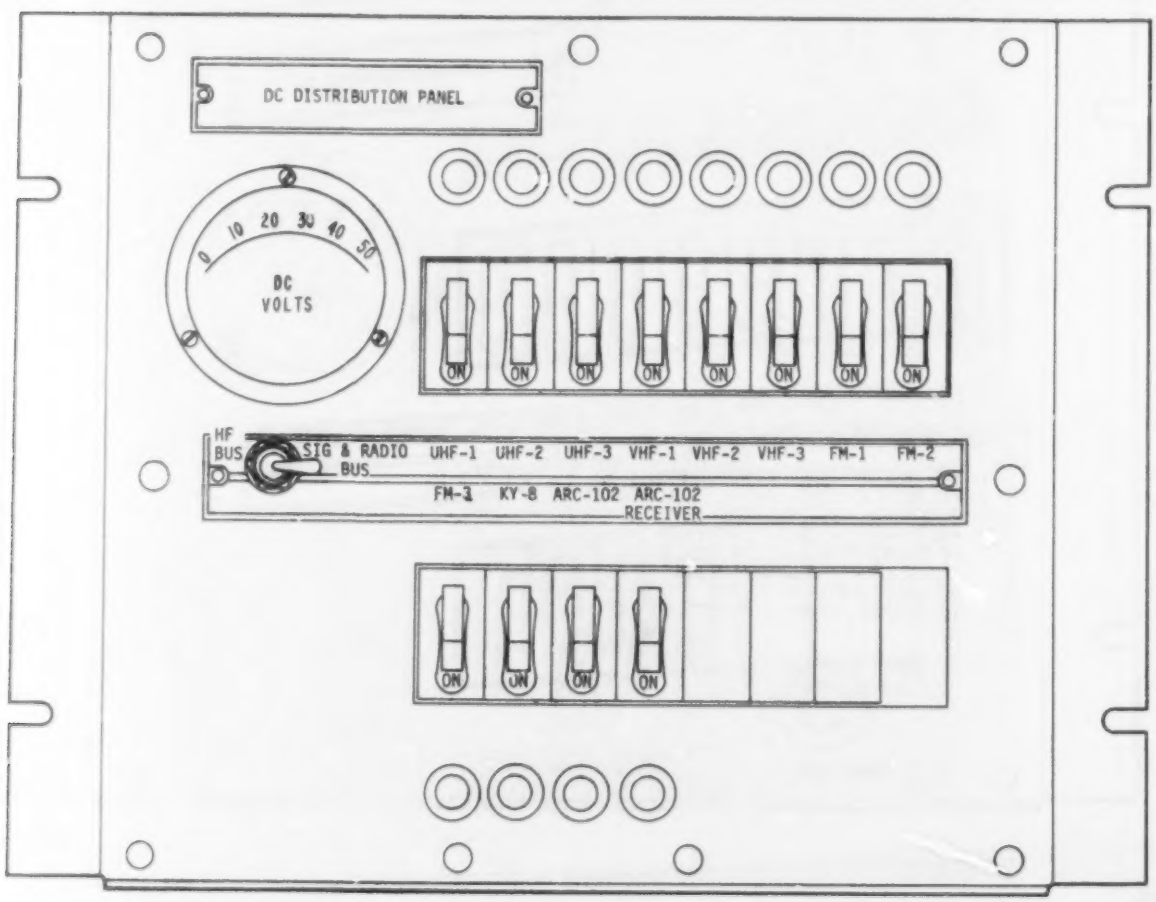

Figure 3-4. DC Power Distribution Panel.

3-8. Footswitch

One footswitch is provided for each of the three operating positions. When operated (pressed), the footswitch (a single-pole, single-throw, spring-loaded switch) actuates the microphone amplifiers and keys the radio transmitter selected by the associated radio control panel.

3-9. Radio-Audio Control Panel, Control and Indicators (fig. 3-5)

One radio-audio control panel is provided for each of the three operating positions. Each panel contains 10 three-position toggle switches and 10 associated radio call lights. The operation for all 10 switches is the same:

Control or Indicator	*Function*
Radio selector switches (UHF-1, UHF-2, UHF-3, VHF-1, VHF-2, VHF-3, FM-1, FM-2, FM-3 and HF).	Selects radio set over which radio communication is to be conducted.
	TALK (up) ..... Radio set is set for transmit-receiver operation.
	MON (center) ..... Audio from receiver is applied to headset-microphone or speaker. Incoming radio call will cause lamp to flash.
	OFF (down) ..... Audio from receiver is not connected to headset-microphone or speaker. Incoming radio call will cause call lamp to flash.
A+B, A switch	A (center) ..... One flight controller has control of all functions, radio and telephone, at station.
	A+B (left) ..... Two flight controllers operate at one position. One operator (A) controls radio circuits and the other (B) controls telephone circuits.
A VOL	Adjusts audio volume in the headset of the (A) operator controlling radio circuits.
B VOL	Adjusts audio volume in the headset of the (B) operator controlling telephone circuits.
KEY switch (three-position, spring-loaded toggle switch).	ON (LOCK) ..... Energizes selected transmitter.
	(up) ..... Locks in up position.
	ON (MON) ..... Energizes selected transmitter.
	(down) ..... Down position springloaded to return to center.
	Center ..... Off.
Call (10, green) lamps	Press-to-test lamp; flash when signal is received by associated radio set. Remains lighted while radio selector switch is in TALK position.
1A fuse (1 ampere)	Provides overload protection for call lamps and dc line to audio coupler. Lamp lights when fuse is blown.

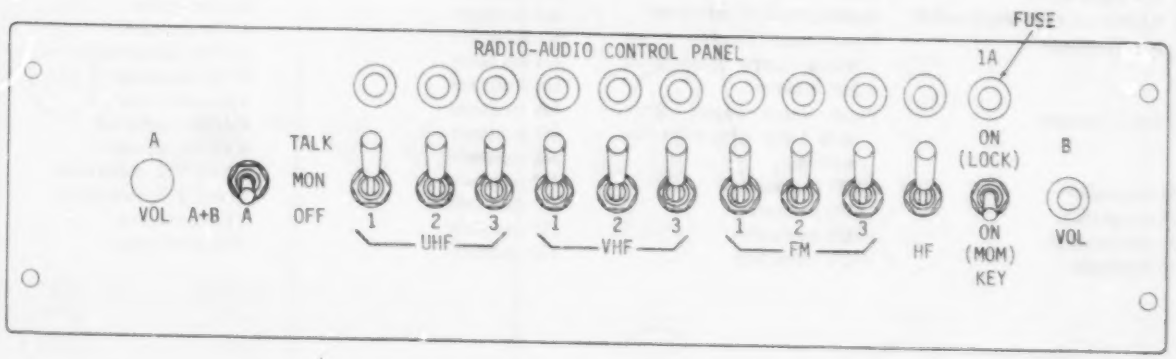

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Figure 3-5. Radio-Audio Control Panel.

3-10. Telephone Control Panel, Controls and Indicators (fig. 3-6)

One telephone control panel is provided for each of the three operating positions.

Control or Indicator	*Function*
Telephone switch (15 three-position, spring-loaded toggle switches).	Select telephone circuit over which communication is to be conducted.
	TALK (up) ..... Permits two-way conversation over telephone line.
	OFF (Center) ..... Places telephone circuit in standby condition.

Control or Indicator	*Function*
Call lamp (15, green)	RING (down) ..... Rings party on distant end of telephone line. Press-to-test lamp; flash when incoming call is received on associated telephone line. Remains lighted while telephone switch is in TALK position.
OPR AUDIO	In ON position, completes telephone line to radio control indicator panel. In OFF position, disconnects line to radio control indicator panel.
Fuse (1 ampere)	Provides overload protection for call lamps and dc line to audio coupler. Lamp lights when fuse is blown.

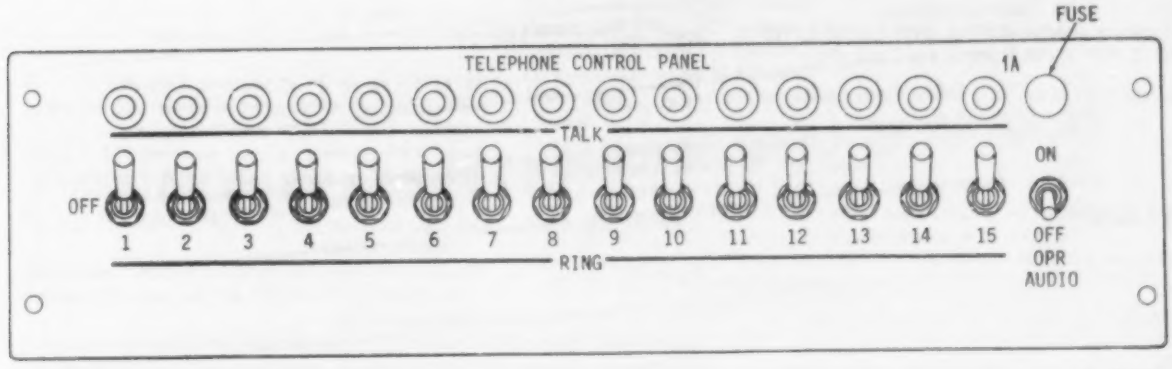

Figure 3-6. Telephone Control Panel.

3-11. Audio Coupler, Controls and Indicators

(fig. 3-7)

Control or Connector	*Function*
S1 28V toggle switch	Applies power to audio coupler.
S2 NIGHT ALARM toggle switch	Applies power to night alarm.
F1 fuse, 2-ampere	Fuses audio coupler circuit boards. Lamp lights when fuse is blown.
F2 fuse, 5-ampere	Fuses audio coupler circuit cards. Lamp lights when fuse is blown.
J33 receptacle	UHF1 connection
J34 receptacle	UHF2 connection
J35 receptacle	UHF3 connection
J36 receptacle	VHF1 connection
J37 receptacle	VHF2 connection
J38 receptacle	VHF3 connection
J39 receptacle	FM1 connection
J40 receptacle	FM2 connection
J41 receptacle	FM3 connection
J42 receptacle	HF connection
J43 receptacle	RING connection
J44 receptacle	28 VDC connection
J45 receptacle	BUZZ connection
J46 receptacle	TEL connection
J47 receptacle	RADIO connection
J48 receptacle	RADIO connection
J49 receptacle	CONT TEL connection
J50 receptacle	CONT TEL connection
J51 receptacle	TEL connection
J52 receptacle	TEL connection

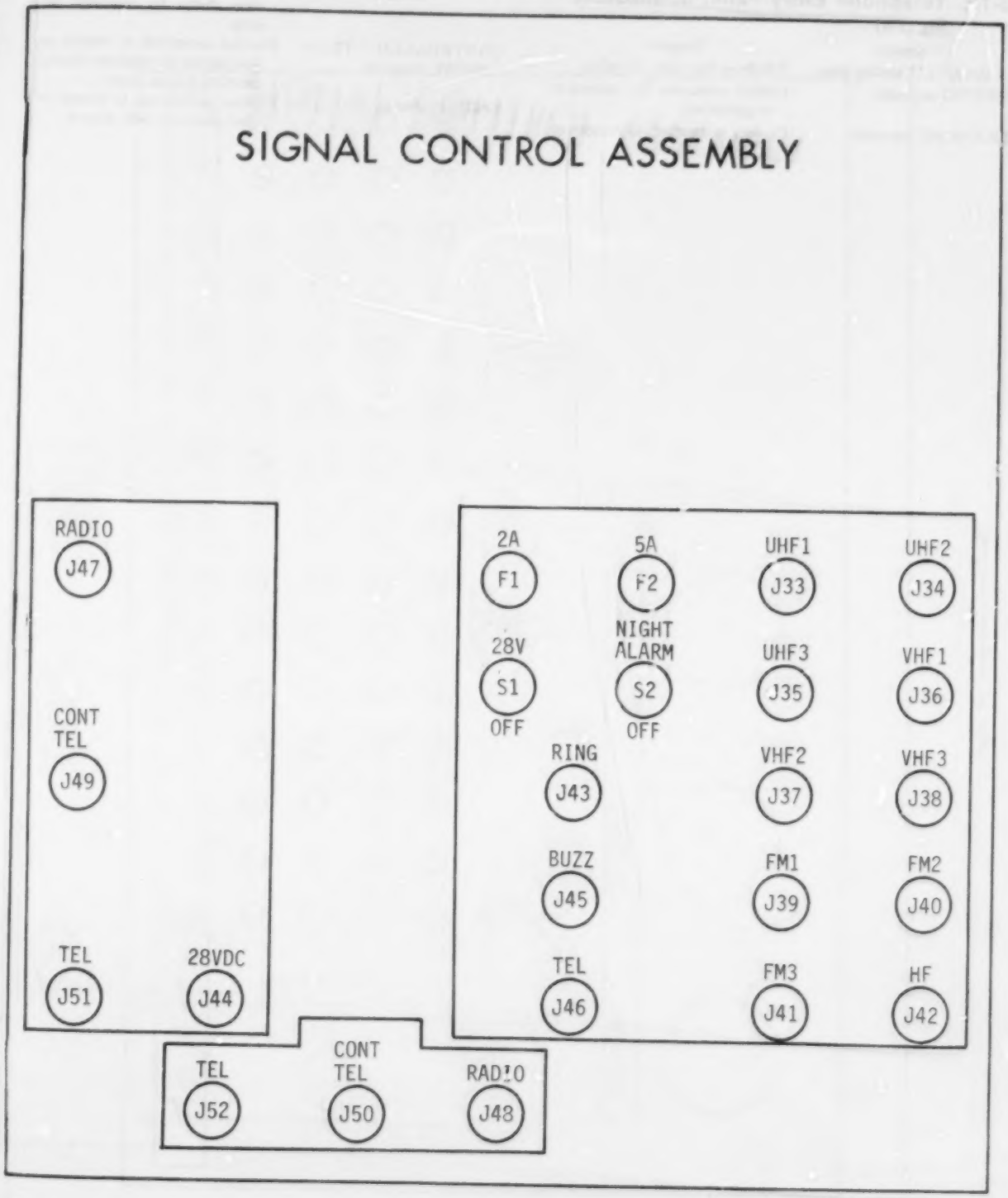

Figure 3-7. Layout of Audio Coupler Controls.

3-12. Telephone Entry Panel Connectors

(fig. 3-8)

Connector	*Function*
L1 through L15 binding posts	Telephone line entry (15 pairs).
GROUND connector	Ground connection for connection to ground rod.
TELEPHONE connector	Provides connection to remote or slave shelter for telephone circuits.
CONTROLLED TELEPHONE connector	Provides connection to remote or slave shelter for telephone circuits including ringing circuit.
RADIO connector	Provides connections to remote or slave shelter for radio circuits.

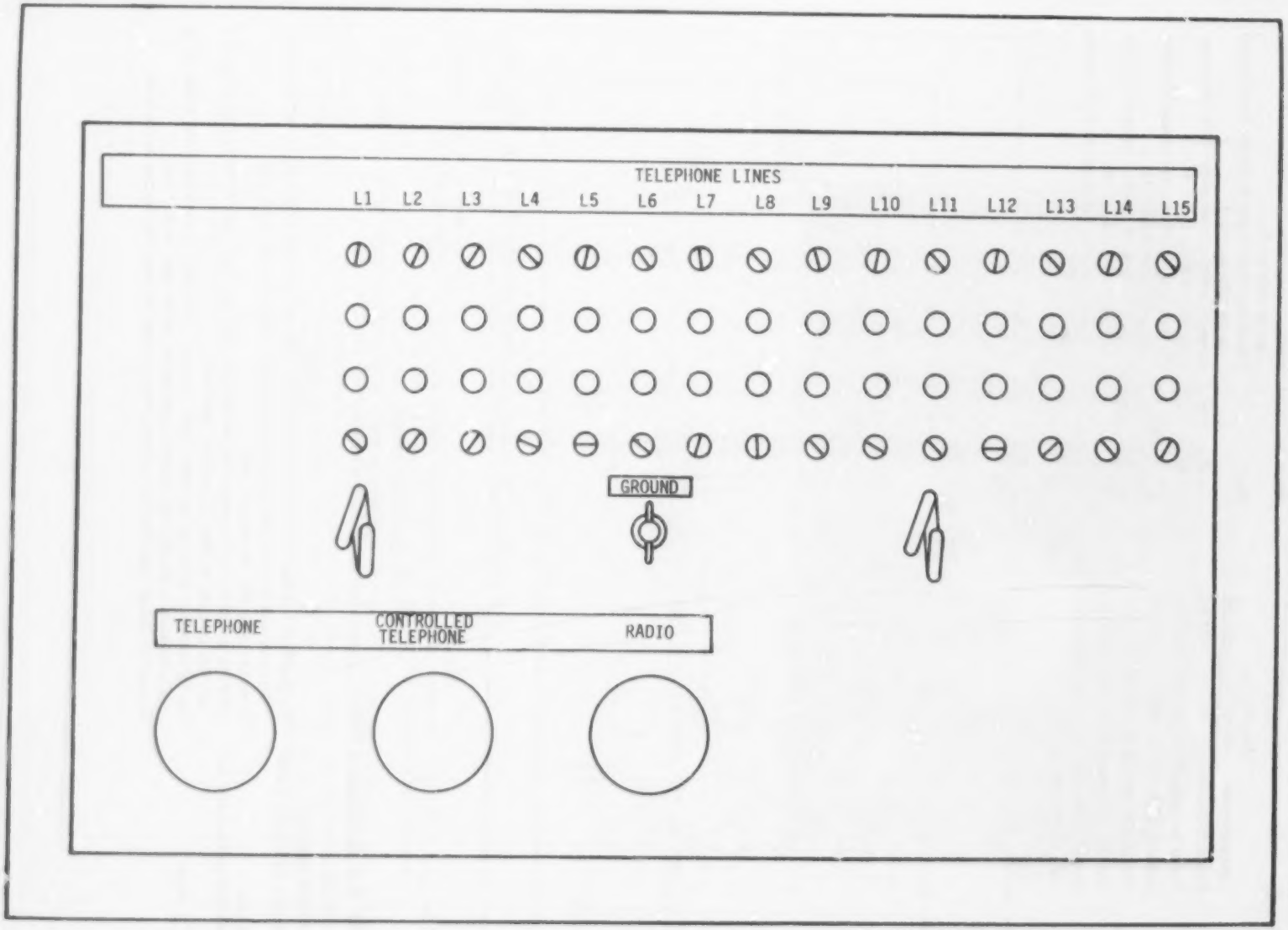

Figure 3-8. Telephone Entry Panel.

3-13. Antenna Entrance Panel Connectors
(fig. 3-9)

Connector	Function
VHF-1	Connects to antenna for vhf No. 1 radio set.
VHF-2	Connects to antenna for vhf No. 2 radio set.
VHF-3	Connects to antenna for vhf No. 3 radio set.
UHF-1	Connects to antenna for uhf No. 1 radio set.
UHF-2	Connects to antenna for uhf No. 2 radio set.
UHF-3	Connects to antenna for uhf No. 3 radio set.
FM-1	Connects to rf connector on antenna matching unit for fm radio set No. 1.
FM-2	Connects to rf connector on antenna matching unit for fm radio set No. 2.
FM-3	Connects to rf connector on antenna matching unit for fm radio set No. 3.
FM-1 CONTROL	Connects to multipin connector on antenna matching unit for fm radio set No. 1.
FM-2 CONTROL	Connects to multipin connector on antenna matching unit for fm radio set No. 2.
FM-3 CONTROL	Connects to multipin connector on antenna matching unit for fm radio set No. 3.
HF-1	Connects to multipin connector on the hf coupler case.

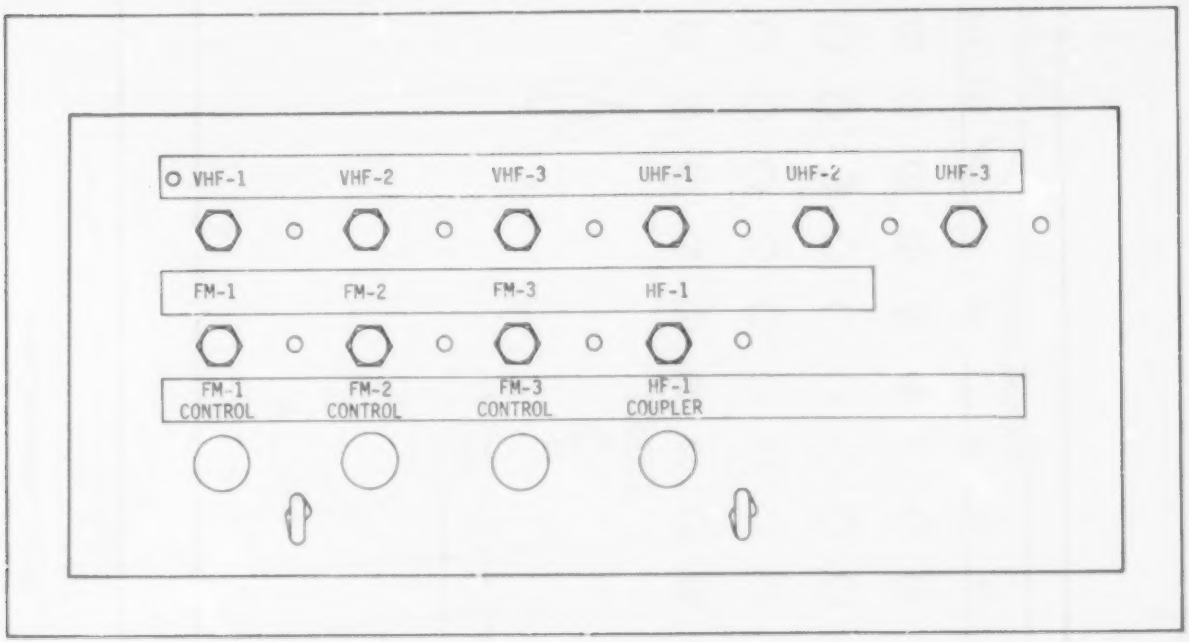

Figure 3-9. Antenna Entry Panel.

3-14. UHF Am Bandpass Filter, Controls and Indicators
(fig. 3-10)

Control or Indicator	Function
Tune knob and tune knob guard bracket	The tune knob is behind the tune knob guard which shields the tune knob from being moved by accident. The knob turns the frequency dial and sets the filter frequency at the same time.
Frequency dial plate	Shows the tuned filter frequency in MHz.
Tune knob guard hold knurled thumbnut	Holds the tune knob guard in place when turned to the right until finger tight. When loosened, turned to left, lets the guard be lifted to get at the tune knob.
Meter sensitivity adjust	Sets the sensitivity of the tuning meter. Turn the knob to the right to get a larger meter needle swing. Turn the knob to the left if the meter needle pegs on the far right on the meter.
Tuning meter	Indicates the output when the filter is tuned. Filter is tuned for maximum reading on the meter.

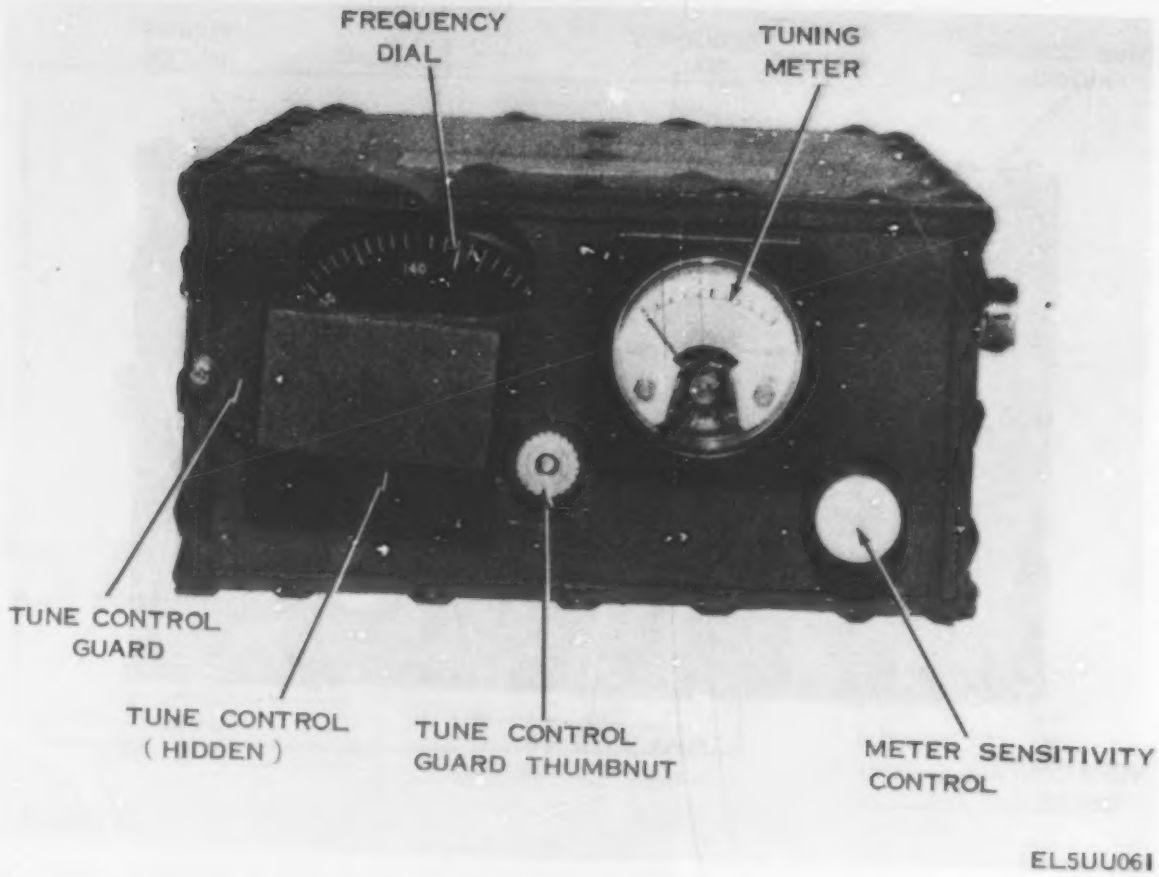

Figure 3-10. UHF AM Bandpass Filter.

3-15. VHF AM Bandpass Filter, Controls and Indicators

(fig. 3-11)

Control or Indicator	*Function*
Tune knob and tune knob guard	The tune knob is behind the tune knob guard which shields the tune knob from being moved by accident. The knob turns the frequency dial and sets the filter frequency at the same time.
Frequency dial plate	Shows the tuned filter frequency in MHz.
Tune knob guard hold knurled thumbnut.	Holds the tune knob guard in place when turned to the right until finger tight. When loosened, turned to left, lets the guard be lifted to get at the tune knob.
Tuning meter	Indicates the output when the filter is tuned. Filter is tuned for maximum reading on the meter.
Meter sensitivity adjust	Sets the sensitivity of the tuning meter. Turn the knob to the right to get a larger meter needle swing. Turn the knob to the left if the meter needle pegs on the far right on the meter.

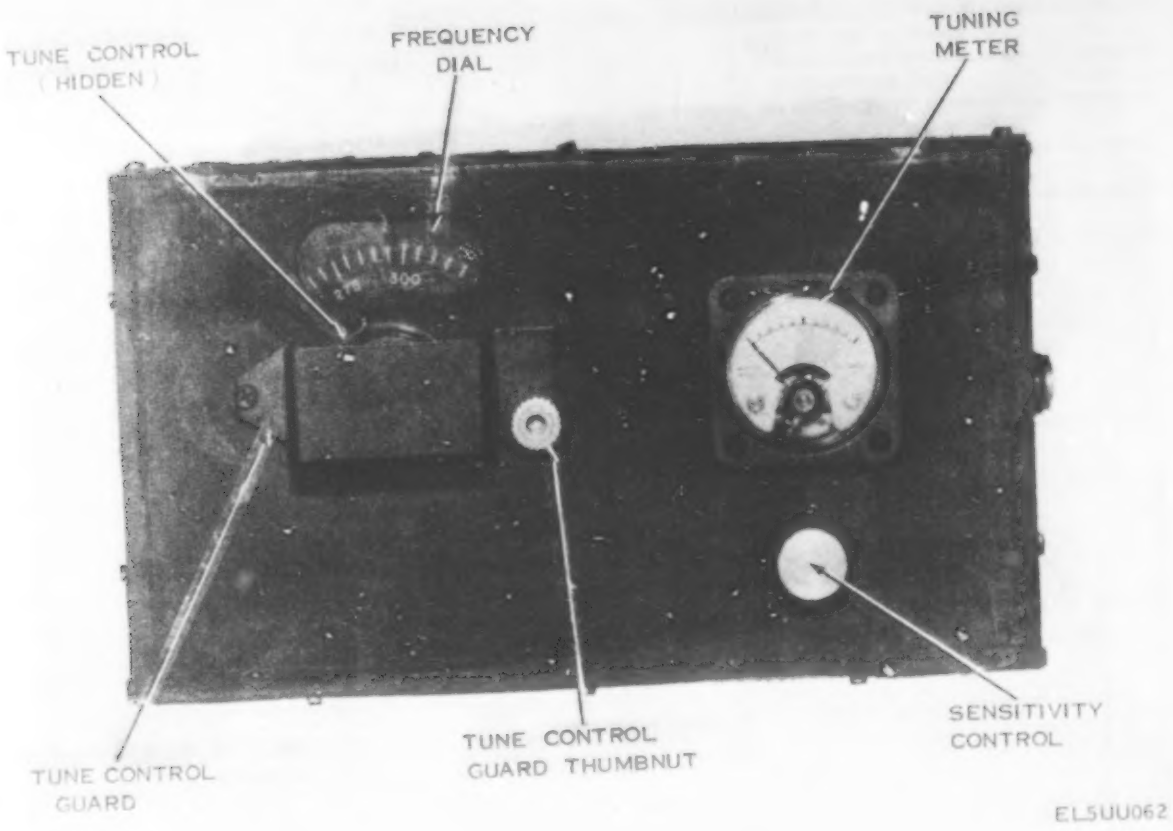

Figure 3-11. VHF AM Bandpass Filter.

3-16. Hf Coupler Case Controls

(fig. 1-20)

Control or Indicator	*Function*
Antenna jack cover and switch	When turned up, uncovers an output jack to connect to a 50-ohm antenna and also makes internal connection to the jack in the coupler case. Normal position is down and connector is covered.
LOAD COIL (2-position toggle switch)	Selects internal load coil in coupler case.
IN	Switch is set to IN when the whip antenna attached to the coupler case is less than 18 feet long and the high-frequency transmission is below 4 MHz.
OUT	Switch is set to OUT when the whip antenna is more than 18 feet long.

3-17. Heater Controls and Indicators

(fig. 3-12)

Connector, fuse, or control	*Function*
POWER 120V	Connects ac input power to heater. 7-ampere fuse protects 115-volt ac circuits for ignition and control.
ON-OFF switch	In ON position, causes heater to ignite (motor starts after preheat). In OFF position, heater will stop when cool.
RESET pushbutton	When pushed, restarts heater after temporary shutdown (ON-OFF switch must be ON.)
THERMO connector	Connects wire from heater thermostat (fig. 1-10) to heater.

HEATER OPERATION

1. TURN HEATER SWITCH TO "ON"
   (MOTOR STARTS AFTER PREHEAT.)

2. IF HEATER STOPS, CHECK FOR FUEL
   OR IGNITION FAILURE AND PUSH
   "RESET" TO RESTART HEATER.

3. TO STOP HEATER TURN SWITCH TO "OFF"
   HEATER WILL STOP WHEN COOL.

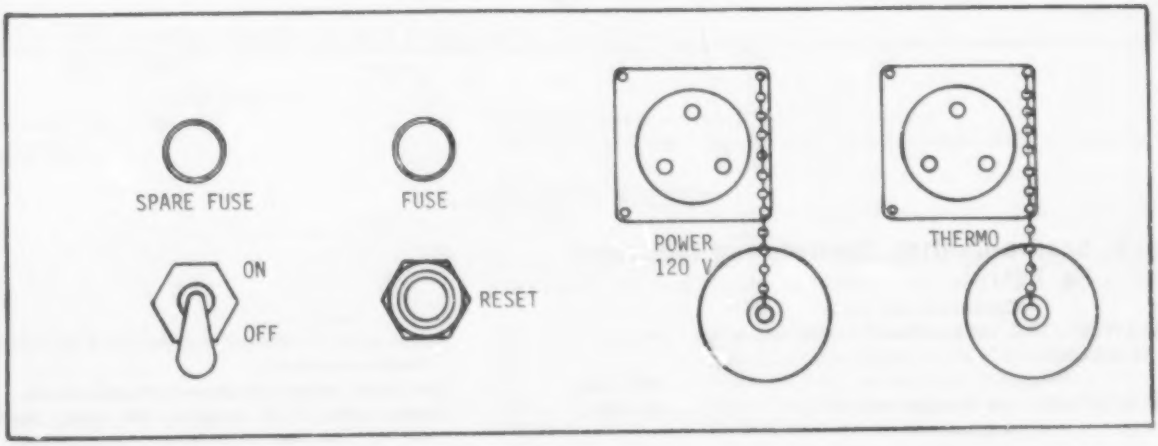

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Figure 3-12. Heater Control Panel.

3-18. KY-8 Control, Controls and Indicators

(fig. 3-13)

Controls and Indicators	*Function*
POWER ON switch	ON ..... Connects power to secure equipment. OFF (down) ..... Disconnects power from secure equipment.
POWER ON (amber) indicator	Lights when POWER ON switch is set to ON.
PLAIN-CIPHER switch	PLAIN ..... Permits normal (unciphered) communications on fm radio No. 3. CIPHER ..... Permits ciphered communications on fm radio No. 3.
PLAIN (red) indicator (with dimmer switch).	Lights when PLAIN-CIPHER switch is set to the PLAIN (up) position.
CIPHER (green) indicator (with dimmer switch).	Lights when PLAIN-CIPHER switch is set to the CIPHER (down) position.
	CAUTION Do not place ZEROIZE switch in the UP (on) position unless capture is imminent (para 3-30).
ZEROIZE switch (2-position locking toggle switch (under spring-loaded cover)).	UP ..... Renders the KY-8 equipment inoperative. OFF (down) ..... Allows operation of the KY-8 equipment.

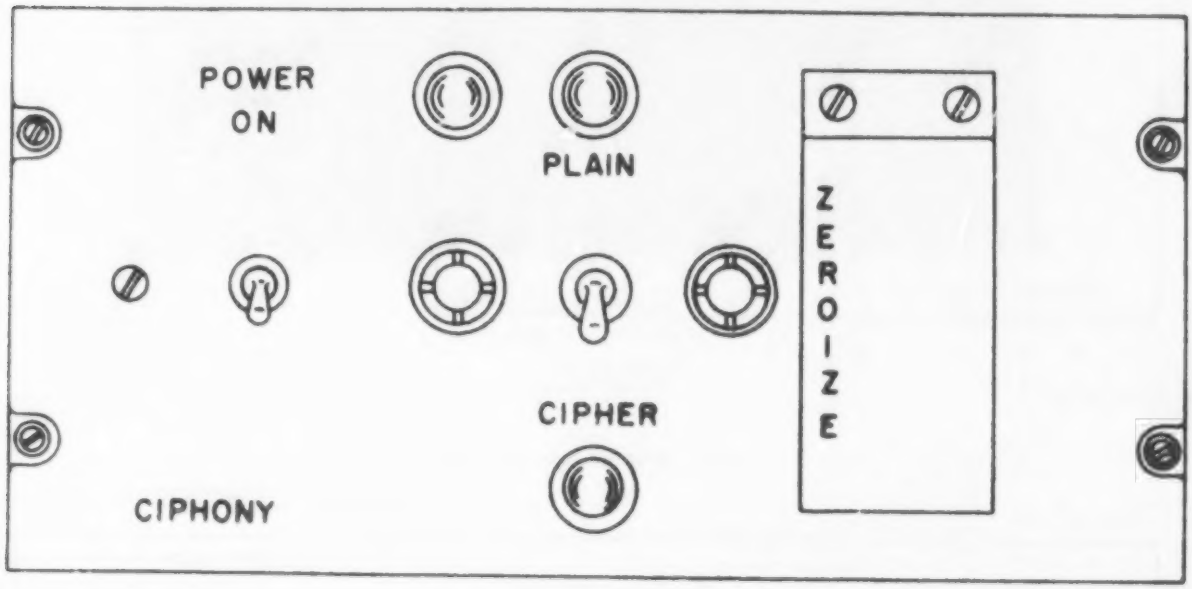

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Figure 3-13. KY-8 Control Panel.

3-19. Secure Control, Controls and Indicators

(fig. 3-14)

Controls and Indicators	*Function*
RECEIVERS 1, 2, 3, and 4 switches (2-position locking toggle switches).	ON (up) ..... Applies output of associated radio receiver to earphone of headset-microphone. OFF (down) ..... Disconnects headset-microphone from radio receiver.
RECEIVERS NAV switch (toggle switch).	ON (up) ..... Applies output of vhf navigation and marker beacon receiver to earphone of headset-microphone, if used. OFF (down) ..... Disconnect headset-microphone from vhf navigation low-frequency navigation and marker beacon receiver.
RECEIVERS INT switch (2-position locking toggle switch)	ON (up) ..... Connect earphone of headset-microphone to interphone system. OFF (down) ..... Disconnects headset-microphone from interphone system.
VOL control	Adjusts earphone volume from interphone system and from all radio receivers.
Transmit-interphone selector switch (6-position rotary switch).	1,2,3, or 4 ..... Connects radio receiver-transmitter 1,2,3, or 4 to headset microphone.

Controls and Indicators	*Function*
INT	Connects headset-microphone to intercommunication system (interphone line).
PVT	Connects headset-microphone to private interphone line.

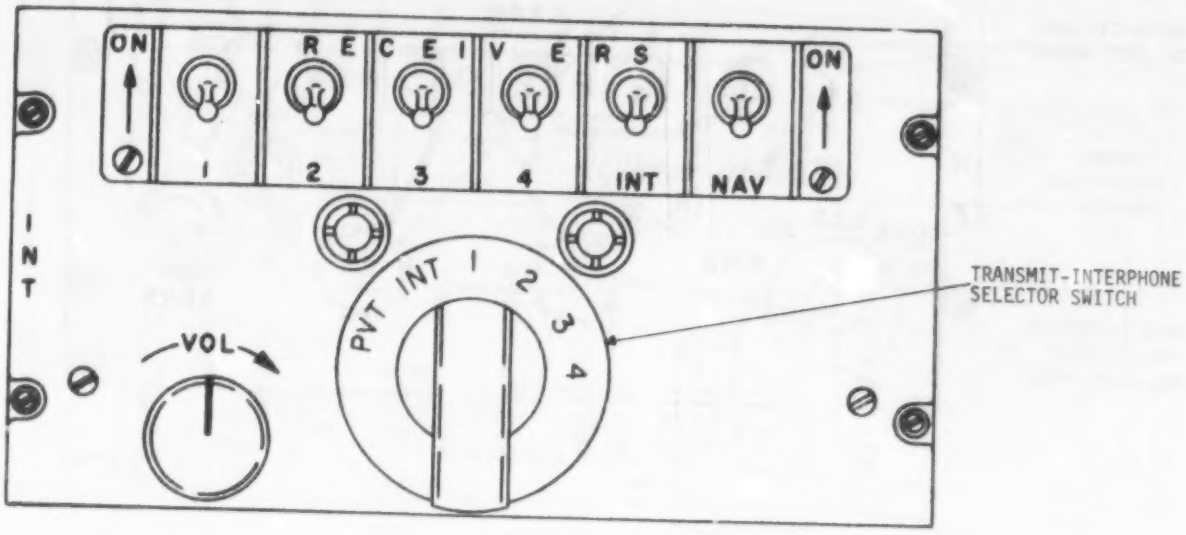

Figure 3-14. Secure Control Panel.

3-20. HF Antenna Coupler indicators

Operation of the hf radio and antenna coupler is controlled by the hf control. Illuminated indicator lights at the flight status console (fig. 1-7) show the operating condition of the hf antenna coupler as follows:

Indicator	*Function*
TUNE (amber light)	Indicates coupler is tuning.
OPERATE (green light)	Indicates coupler is ready for operation.
FAULT (red light)	Indicates coupler is not ready for operation.

3-21. HF Control, Controls and Indicators (fig. 3-15)

Control or Indicator	*Function*
Frequency select knobs	Select the frequency to which hf radio set is to be tuned.
Megacycles select knob	Selects a frequency in MegaHertz from 2 to 29 MHz in 1-MHz steps.
One hundred kilocycle select knob	Selects a hundred kiloHertz point from 0 to 9, in 0.1-MHz steps.
Ten kilocycle select knob	Selects a ten kiloHertz point from 0 to 9 in 0.01-MHz steps.
One kilocycle select knob	Selects a one kiloHertz point from 0 to 9, in 0.001-MHz steps.
Mode selector switch (4-position rotary switch).	
OFF	Turns the hf radio set off.
USB	Selects the upper sideband mode of operation.
LBS	Selects the lower sideband mode of operation.
AM	Selects the amplitude-modulated mode of operation.
DATA	Permits use of auxiliary data equipment.
HF SENS knob	Adjusts the volume in the headset-microphone or speaker.
FREQ indicators	Indicate the frequency to which the hf radio set is tuned.

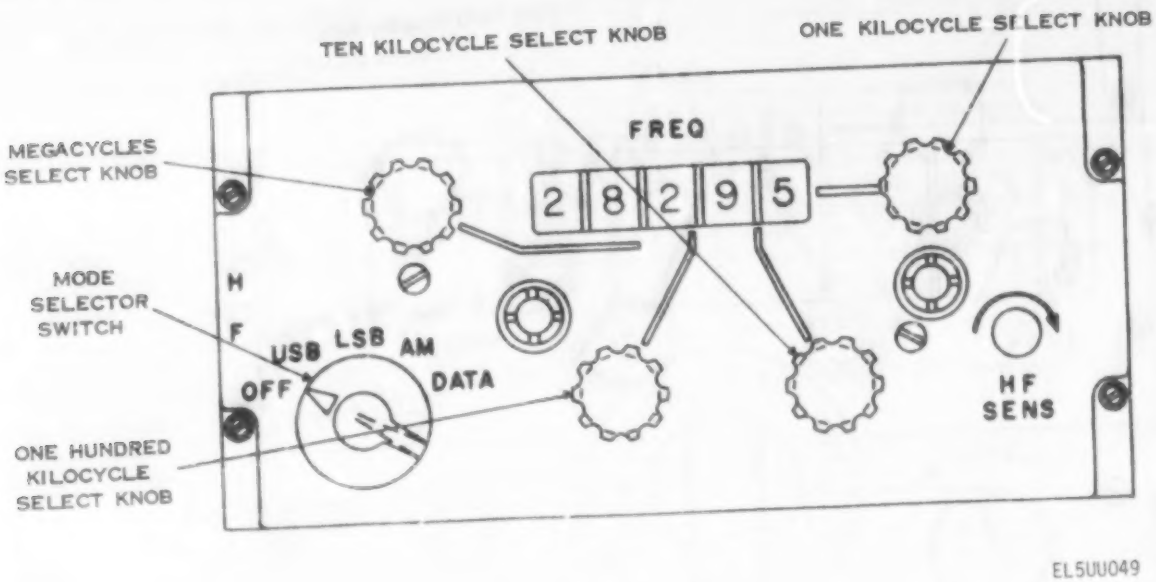

Figure 3-15. HF Control.

3-22. FM Radio Set, Controls and Indicators

(fig. 3-16

Control, Indicator or Receptacle	*Function*
Squelch CALL indicator	During squelch operation, lights to indicate signal is received when LIGHT switch is ON and SQUELCH switch is in NEW ON or OLD ON.
LAMP holder	Holds dial window lamp.
LIGHT switch	Controls dc power to dial window lamp and squelch CALL indicator.
BAND switch	Selects tuning of frequency band A (30.00 to 52.95 MHz) or B (53.00 to 75.95).
SPEAKER switch	Controls received audio signal to loudspeaker (ON and OFF).
MC TUNE control	Provides manual tuning of radio in 1-MHz steps (30, 31, 53, 54, etc).
KC TUNE control	Provides manual tuning of radio in 0.05-MHz steps (.05, .10, .15, etc).
POWER switch	Controls dc power to radio. OFF BREAKER RESET.. Turns off dc power to radio; and resets circuit breaker when it is tripped. LOW ..... Turns on dc power to radio; when radio is keyed for transmission, it transmits on low rf power (0.5 to 8 watts). HIGH..... Turns on dc power to radio; when radio is keyed for transmission, it transmits on high rf power (35 watts, min).
SQUELCH switch	For reception, selects type of squelch function to be used; during transmission 150-Hz squelch tone is transmitted in all positions of the switch, except OLD ON. NEW ON..... Received 150-Hz squelch tone unsquelches the receiver. OLD ON ..... Noise that is part of distant transmitter carrier frequency unsquelches the receiver.
ANT CONT receptacle	Connection for control cable, CX-4722/VRC, to antenna matching unit. Control of antenna matching unit networks is automatic and occurs when MC control and BAND switch are positioned.
X-MODE receptacle	Connection for cable to X-mode equipment (such as telephone multiplex, secure voice, and digital data equipment) for control of radio transmission and reception by X-mode equipment. The X-MODE-NORMAL switch inside the radio must also be set to X-MODE position when X-mode operation is used. The X-MODE receptacle cover contains wiring to enable operation when X-mode equipment is not connected to the receptacle. The X-MODE-NORMAL switch in the radio must also be set to NORMAL position.
ANT receptacle	BNC, 50-ohm impedance receptacle for antenna cable.

Control, Indicator or Receptacle	*Function*
Power/audio receptacle (P401) (on rear of receiver-transmitter).	Connection to radio receptacle of MT-1029/VRC for application of dc power to the radio and for the passage of dc power and control and audio signals between the radio and equipment connected to the MT-1029/VRC.

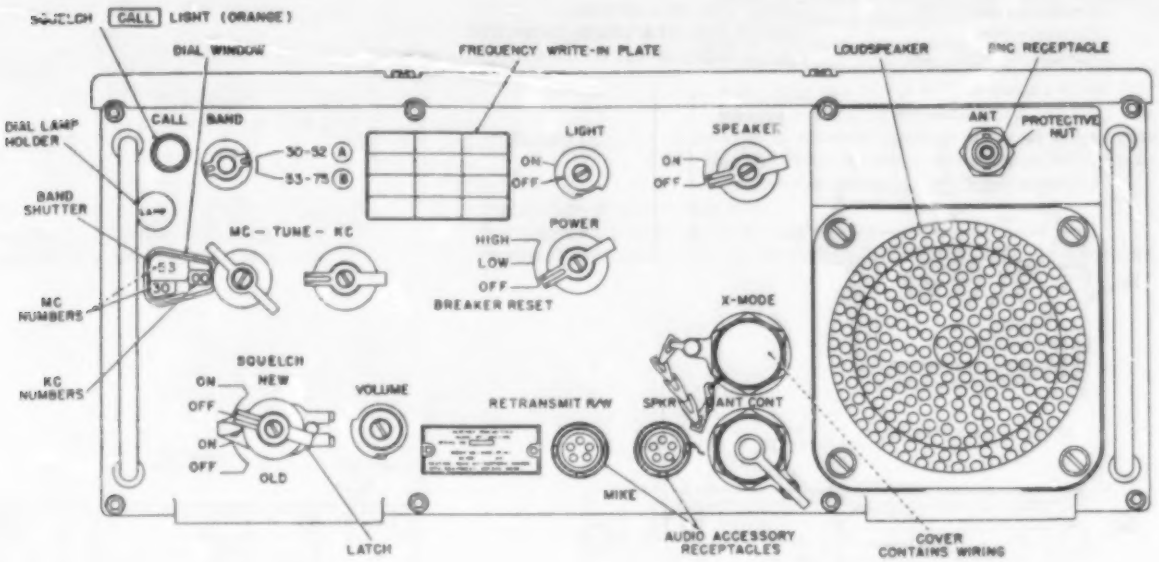

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Figure 3-16. FM Radio Set Controls.

3-23. UHF Radio Set, Controls and Indicators
(fig. 3-17)

Item No.	*Control or Connector*	*Function*
1	Manual frequency selector switch	Selects 100's digit of frequency (either 2 of 3) in MHz.
2	Manual frequency selector switch	Selects 10's digit of frequency (0 through 9) in MHz.
3	Manual frequency selector switch	Selects units digit of frequency (0 through 9) in MHz.
4	Manual frequency selector switch	Selects tenths digit of frequency (0 through 9) in MHz.
5	Manual frequency selector switch	Selects hundredths and thousandths digits of frequency (00, 25, 50, or 75) in MHz.
6	Preset channel selector switch	Selects one of 20 preset channels.
7	MANUAL-PRESET-GUARD switch	Selects method of frequency selection: MANUAL—Any one of 7,000 frequencies is manually selected using the five frequency selector switches. PRESET—Frequency is selected using the preset channel selector switch for selecting any one of 20 preset channels. GUARD—The main receiver and transmitter are automatically tuned to the guard frequency and the guard receiver is disabled.
8	SQUELCH ON-OFF switch	Enables and disables squelch of main receiver.
9	VOL control	Adjusts audio level.
10	TONE switch	Enables transmission of a 1,020 Hz tone on the selected frequency. **NOTE** Tone-modulated signal may be used to check out the radio set and isolate faulty microphone circuitry.
11	Function selector switch	Selects operating function: OFF—Shuts down equipment. MAIN—Enables main receiver and transmitter. BOTH—Enables main receiver, transmitter, and guard receiver. ADF—Enables ADF and main receiver.
12	BW switch (NB-WB)	Selects wideband or narrow-band selectivity of main receiver.
13	SQ-MN control	Adjust threshold level of squelch for main receiver.

Item No.	Control or Connector	Function
14	SQ-GD control	Adjust threshold level of squelch for guard receiver.
15	PRESET switch	Stores selected frequency in selected preset channel.
	Fuse (F1)	28 vdc input line (5 amp).
	Antenna connector (J2)	Connect radio set to antenna.
	Electrical connector	Connects radio set to existing control lines.
	Auxiliary connector (J3)	Used for testing of radio set and dual control operation.

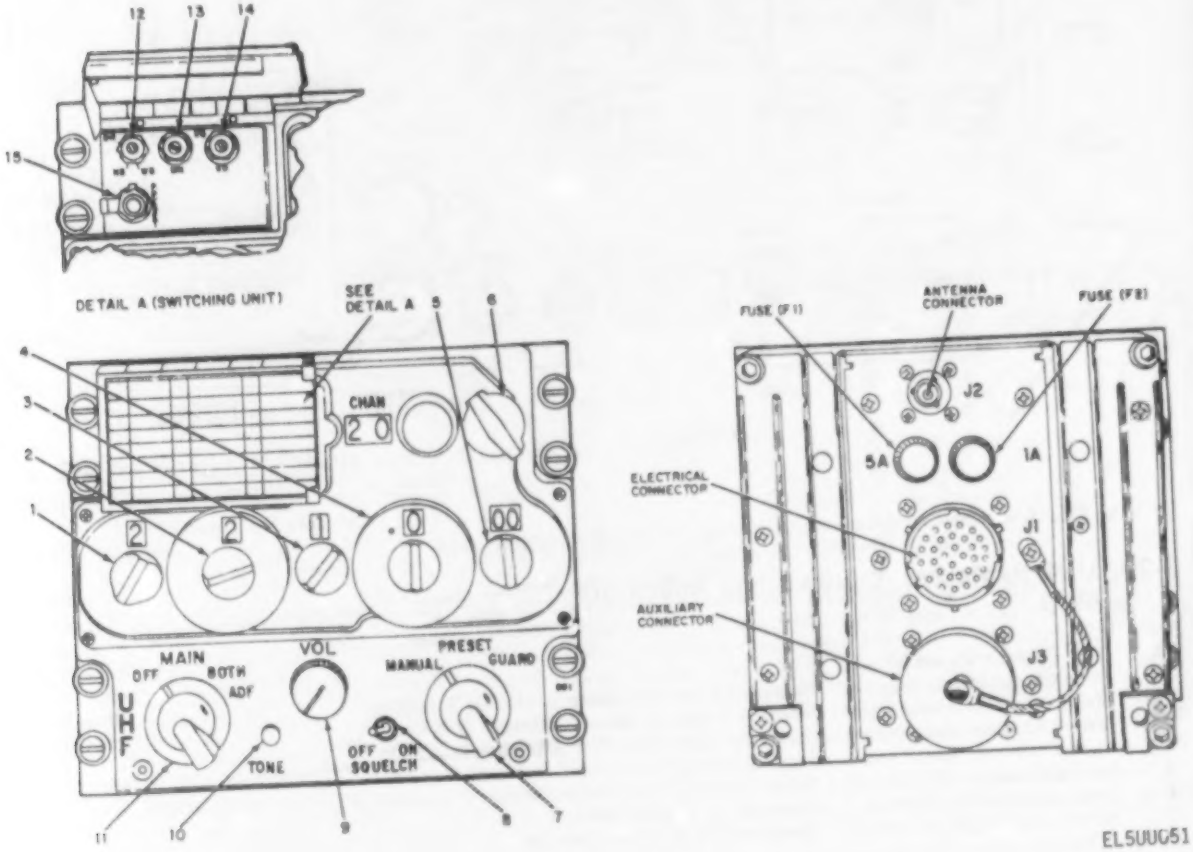

Figure 3-17. UHF Radio Set Controls.

3-24. VHF Radio Set, Controls and Indicators

(fig. 3-18)

Control, Indicator, or Connector	Function
MEGACYCLES indicator	Indicates frequency to which main receiver/transmitter is tuned.
MegaHertz control (rotary)	Tunes the main receiver/transmitter in 100-MHz, 10-MHz, and 1-MHz steps as indicated by the first three digits of the MEGACYCLES indicator. (Guard receiver is fixed-tuned.)
KiloHertz control (rotary)	Tunes the main receiver/transmitter in 100-kHz 25-kHz steps as indicated by the last three digits of the MEGACYCLES indicator. (GUARD receiver is fixed-tuned.)
RCVR TEST pushbutton	When pressed, injects a noise signal into the main receiver to provide an audible indication of proper receiver performance.
SQUELCH screwdriver adjustment	Adjusts the level at which received signals are squelched. NOTE This is adjusted only by higher category maintenance personnel.

Control, Indicator, or Connector	*Function*
Function selector switch (5-position, rotary).	Determines the operating mode of the radio set:
	OFF ..... Removes power from radio set; radio set is inoperative.
	T/R ..... Provides for radio set operation as a transceiver on main channels indicated on MEGACYCLES indicator. (Guard receiver is inoperative.)
	T/R GUARD ..... Same as T/R above plus reception of guard channel.
	D/F ..... Provides for radio set operation in the direction finding mode. May also be operated as transceiver on main channels indicated on MEGACYCLES indicator.
	RETRAN ..... Provides for retransmit operation when used with a second radio set. May also be operated as a transceiver on main channels indicated on MEGACYCLES indicator.
AUDIO control	Adjusts radio set audio output level.
Connector J1 (32-pin on rear of radio set).	Provides signal, control, and power connections to the radio set.
Connector J2 (coaxial on rear of radio set).	Provided for connection of the am/vhf communication antenna system to the radio set.

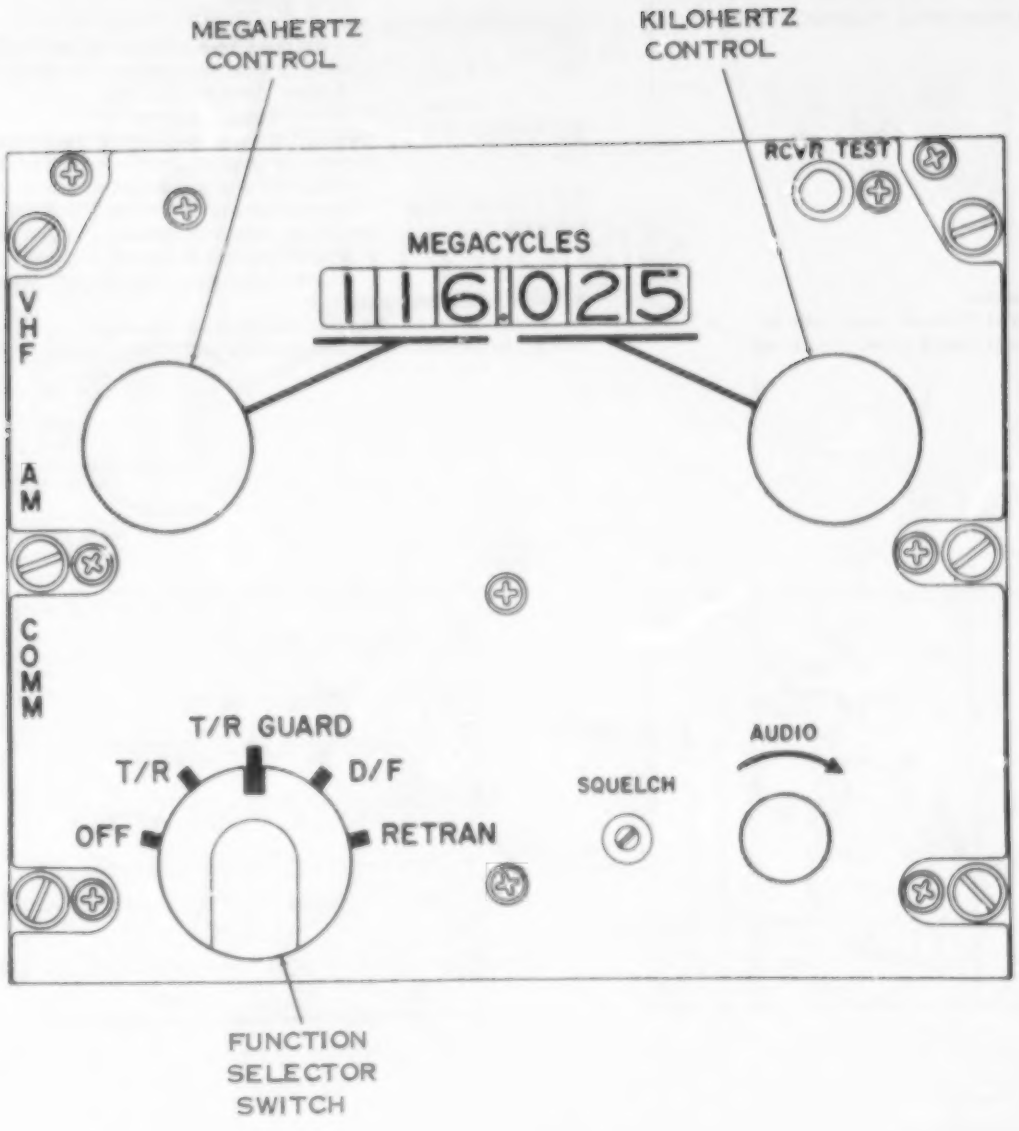

Figure 3-18. VHF Radio Set Controls.

3-25. Miscellaneous Shelter Controls

Control	*Function*
FLUORESCENT LIGHT switch (fig. 1-8)	Turns on the eight fluorescent lamps in the shelter.
BLACK OUT BYPASS switch (fig. 1-8)	When turned on prevents shelter lights from being turned off when the rear door is opened.
EXHAUST FAN switch (fig. 1-5(5))	Turns shelter exhaust fan on and off.
SPEAKER switch	Turns speaker on and off.
SECURITY CALL INDICATOR lamp (fig. 1-6).	Indicates an incoming call on FM radio No. 3 when voice security system is provided.
SMOKE DETECTOR (fig. 3-19)	Provides audible alarm warning of fire. Indicator lights when power is supplied to the unit.

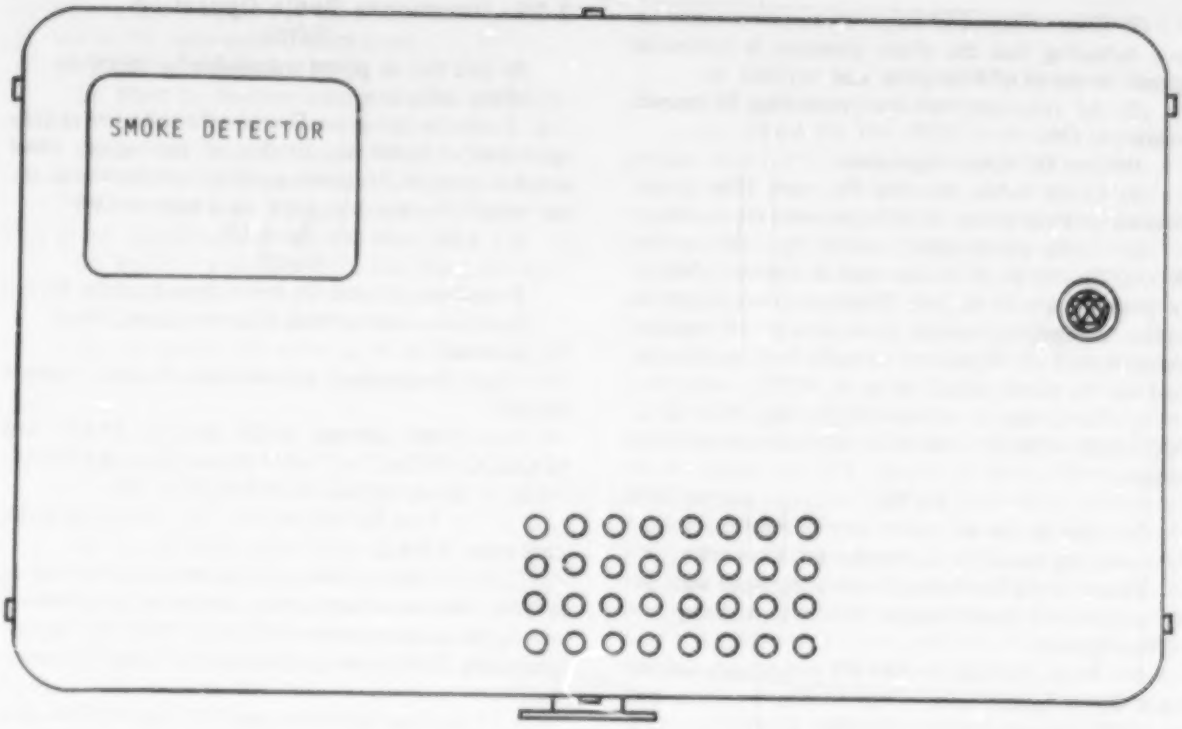

Figure 3-19. Smoke Detector.

Section II. OPERATION UNDER USUAL CONDITIONS

3-26. General

Preoperation of the FCC may be divided into the following phases: Preparation for daily operation, verification that the starting procedure has been accomplished, and verification that the console operating accessories are properly connected. Normal daily operation includes nonsecure radio preoperation and operation. Also in normal daily operations, the operator assuming his duties will:

a. Verify that the main power source is delivering the correct output to the system by seeing that the PHASE SEQUENCE INDICATOR on the ac power distribution panel (fig. 3-1) is lighted and the AC VOLTS meter and frequency meter indicate 120 volts and 60 Hz respectively.

b. If the system is in an operational status and the operator is merely assuming duties from another operator, omit *c* through *f* below. If the system is in a nonoperational status, perform *c* through *f* below.

c. Verify that all operating accessories are properly connected for use at the operator consoles.

d. Ensure that the clock indicates the correct time.

e. Prepare the flight strip holders for the day's operation.

f. Verify that the starting procedure of paragraph 3-27 has been accomplished and that all radio channels are set at the frequency specified in the station frequency plan.

g. Establish communication on the nonsecure radios (para 3-29).

h. To operate the telephone system, proceed as detailed in paragraph 3-31.

i. To establish communication on the secure radio, proceed as detailed in paragraph 3-30.

j. To change radio operating channels and frequencies, proceed as detailed in paragraph 3-32.

k. To shut down the equipment, perform the stopping procedure of paragraph 2-33.

3-27. Starting Procedure

a. General. Set all circuit breakers in the ac power distribution panel (fig. 3-1) and dc power distribution panel (fig. 3-4) to OFF.

b. Primary AC Power Application.

(1) At the ac power distribution panel (fig. 3-1), use the VOLT/FREQ. PHASE MONITOR to check the voltage and frequency of each phase of ac input power. The AC VOLT meter should cate 120 volts ± and the FREQUENCY meter should indicate 60 Hz ± 2.

(2) If the voltages and frequency are correct, and the lamp indicating that the phase sequence is correct is lighted, set the MAIN circuit breaker to ON.

(3) As required, set the remaining ac circuit breakers to ON.

c. Primary DC Power Application.

(1) Check to see that the PS-1 and PS-2 circuit breakers in the ac power distribution panel are at ON.

(2) At the power supply control (fig. 3-3), set the PS1-AUTO-PS2 switch to the position corresponding to the power supply to be used. Either dc power supply is capable of supplying enough power to meet all requirements of the FCC. However, normally both supplies are used and the switch should be set to AUTO.

(3) Turn the dc power supply (fig. 3-2) D.C. VOLTAGE ADJUST control to the extreme left (low output).

NOTE

The fan in the dc power supply must be at operating speed for the equipment to operate. Failure of the fan to obtain operating speed will prevent the input voltage circuits from being completed.

(4) Press and hold the START button until the fan inside the equipment is up to operating speed. Note that the INPUTS green light (POWER SUPPLY 1 and POWER SUPPLY 2) glows. Both OUTPUTS green lights should also glow (dc distribution panel).

(5) Slowly turn the D.C. VOLTAGE ADJUST to the right (increased output) until the dc voltmeter on the front panel indicates 28.0 volts.

NOTE

Check to be sure that the ammeter indicates in the red region, turn the equipment off, recheck the ac input voltage frequency and if correct, refer to higher category of maintenance.

(6) To make the dc available to the radio sets and telephone junction box, set the appropriate circuit breaker of the dc distribution panel to ON.

3-28. Preoperational Procedures

a. Before operating the radio equipment, check to see that all radio equipment power cables and signal cables are properly connected.

b. Determine the frequency channels that will be used for each radio set (UHF-1, UHF-2, UHF-3, VHF-1, etc). Make note of the frequency channel to be used with each radio control switch.

c. Determine the area or zone of responsibility.

d. Coordinate all hf radio and ground-to-ground communication facilities.

e. See that the map board is clean and ready for use.

f. See that the flight progress strip rack is ready for use.

g. Press each call lamp on the control panels to make sure that it is operative. The lamp should light when the jewel is pressed.

3-29. Nonsecure Radio Operation

NOTE

Be sure that dc power is available for operation of the radio sets.

a. Radio Set Operation. Energize the radio sets as indicated below. Check to see that all radio-audio panel switches are at MON (center position) and that the dc circuit breaker for the radio set to be used in at ON.

(1) *UHF radio sets* (fig. 3-17).

NOTE

Procedures (*a*) and (*b*) below must be done in successive steps as listed if squelch has not been adjusted.

(*a*) *Preliminary adjustment of main receiver squelch.*

1. Set function switch (11) to MAIN and MANUAL-PRESET-GUARD switch (7) to MANUAL.

2. Set SQUELCH switch (8) to ON.

3. Turn SQ-MN control (13) counterclockwise until noise is heard.

4. Turn control clockwise just until the receiver is quiet, then continue turning clockwise an additional one-eighth turn.

(*b*) *Preliminary adjustment of guard receiver squelch.*

1. Set function switch to BOTH and MANUAL-PRESET-GUARD switch to MANUAL. (Main receiver SQUELCH must be in the ON position.)

2. Turn the SQ-GD control (14) counterclockwise until noise is heard.

3. Turn control clockwise just until the receiver is quiet, then continue turning clockwise an additional one-eighth turn.

NOTE

A completely separate guard channel receiver is provided in the radio set to monitor the guard frequency continuously while operating on the main channel frequency. To energize the guard receiver, place the function switch to BOTH and the MANUAL-PRESET-GUARD switch to GUARD.

(*c*) *Two-way voice, normal.* Make the preliminary adjustments above, as needed, and proceed as follows for normal two-way voice communication.

1. Set the function selector switch to MAIN.

2. Set the MANUAL-PRESET-GUARD switch for the desired method of frequency selection and adjust the selected frequency adjustment controls for the required operating frequency.

3. Key the transmitter and tune the uhf bandpass filter to the operating frequency.

4. Perform a talk test and monitor the sidetone in the headset; adjust the VOL control to a comfortable level.

NOTE

The audio volume level at the headset-

microphone is adjusted by use of the VOL control on the radio-audio control panel.

(2) *VHF radio sets (fig. 3-18).*

(*a*) Place the function selector switch in the T/R position.

(*b*) Set the megacycle and kilocycle frequency selector switches to the assigned transmit/receive channel.

(*c*) Key the transmitter and tune the vhf bandpass filter to the operating frequency.

(*d*) Perform a talk test and adjust the audio control for a suitable sidetone level in the headset.

(3) *FM radio sets (fig. 3-16).*

(*a*) Set the BAND switch to either the 30-52 or the 53-75 position depending on the frequency band to be used.

(*b*) Set the MC-TUNE and KC-TUNE knobs to the frequency desired.

(*c*) Set the SQUELCH control to the hold-on position.

(*d*) Set the SPEAKER switch to OFF.

(*e*) Set the POWER switch to LOW or HIGH depending on whether the tactical situation calls for a 1- to 3-watt or a 35-watt transmitter output power.

(*f*) If the voice security system is used, disconnect connector P2 on cable W309 from secure junction box connector J2 (fig. 1-5). Connect cable connector P3 of cable W367 to the connector on the secure junction box 1A73. The FM NO. 3 switches on the radio control panels have no control functions. The KY-8 dc circuit breaker must be set to ON. On the secure control (located in the control unit grouping on the radio equipment rack), set the RECEIVERS 1 switch to ON, and set the transmit-interphone selector switch to position 1.

(*g*) Set the VOLUME control as required, in conjunction with the VOL control on the radio control panel for FM NO. 1 and FM NO. 2. FM radio set No. 3 can only be monitored at the special headset at the supervisor's console. The volume at that headset is controlled by the VOLUME control at the fm radio set and the VOL control at the secure control.

(4) *HF radio set.*

NOTE

Three indicator lamps (fig. 1-7) between the operator console positions indicate the operating status for the hf antenna coupler. The lamps (green, red, and yellow) are connected in parallel with the antenna coupler indicator lamps. The yellow lamp lights to indicate that the coupler is tuning. When the green lamp is lighted, the radio set is ready for operation, and when the red lamp is lighted, the tuning system has not operated and transmission is not possible.

(*a*) Depending on the mode of transmission desired, set the hf control unit (fig. 3-15) mode selector switch to USB, LSB, or AM. Operation of the mode selector switch to any position but OFF applies power to the radio set.

(*b*) Set the frequency selector switches to the assigned hf transmit/receive channel.

(*c*) Adjust the HF SENS knob until the background noise heard in the headset is barely audible.

b. Control Position Operation. After the modes of operation and selection of the communications channels are accomplished (*a* above), all 10 radio communication sets may be operated from each of the three radio control panels, except fm radio set No. 3, when voice security connections are made (*a*(3) (*f*) above). Operation of the radio in voice security mode is discussed in paragraph 3-30 below.

(1) *Monitoring.* When there are no radio communications, the radio control switches may be set in the MON (center) or OFF (down) positions. When in the MON position, all incoming radio calls will be heard in the headset-microphone and on the speaker/amplifiers. In addition, the incoming call will cause the appropriate radio call lamp to flash, indicating to the flight controller on which radio set the call is being received. The MON position is primarily used during periods of light traffic when the flight operator is not necessarily seated at his position or is engaged in other duties. When in OFF position, an incoming call will cause the call lamp to flash, providing the controller with a visual indication.

(2) *Transmit/receive.* To respond to an incoming call (or to initiate transmission), the operator sets the radio control panel switch beneath the flashing call lamp to the TALK (up) position and either presses the footswitch, presses the push-to-talk button on the headset-microphone cord or sets the KEY SW. switch on the radio control panel in the up or down position. Placing the switch in the up position holds the transmitter energized. The KEY SW. is spring-loaded in the down position and can be used as a conventional push-to-talk switch. Normal two-way push-to-talk radio communication is accomplished by releasing the key switch. The headset volume can be adjusted with the VOL control on the radio control panel. Speaker/amplifier volume is adjusted by the SPEAKER VOLUME control on the left side of the speaker/amplifier.

3-30. Secure Radio Preoperational and Operating Procedures

a. Preoperating Procedures. Before operating the KY-8 control, secure control, and FM radio set No. 3, the KY-8 must be adjusted by the responsible maintenance personnel. The special printed circuit card PL-1208/VRC (APC) must be requisitioned and installed in the KY-8 by the responsible maintenance personnel to ensure that unciphered (plain language) communications can be received on FM radio set No. 3 even though the PLAIN-CIPHER switch on the KY-8 control is in the CIPHER position. To obtain best results when operating in the cipher mode, the NORMAL/X-MODE switch on the in-

side of FM radio set No. 3 (TM 11-5820-401-20) should be in the X-MODE position.

NOTE

FM radio No. 3 can be used to receive ciphered or unciphered messages in either the SQUELCH NEW (150H3) or in the SQUELCH OLD (noise) modes.

b. Unciphered Operation.

(1) Set the PLAIN-CIPHER switch on the KY-8 control to PLAIN-CIPHER switch on the KY-8 control to PLAIN and observe that the PLAIN indicator lights.

(2) Set the secure control transmit-interphone selector switch to 1. When a call is received on fm radio set No. 3, the SECURE CALL indicator on the operator's console will light to alert the operator of an incoming call.

(3) Incoming signals can only be heard in the supervisor's headset that connects to the secure voice system junction box. Two other headsets are available at the position for operation with the other nine radio sets. These are connected to the supervisor's audio control panel located on the curbside wall. To call attention to an incoming call when the fm radio set No. 3 headset is not worn, a SECURITY CALL INDICATOR lamp (amber) is provided.

(4) To transmit, depress the pushbutton on the secure head-set-microphone and speak into the microphone.

NOTE

If a ciphered message is received when set up for unciphered communication, a 1,200-Hz beep will be heard for approximately 2 seconds followed by a rushing noise for the length of the received message.

c. Ciphered Operation.

(1) Set the PLAIN-CIPHER switch on the KY-8 control to CIPHER and observe that the CIPHER indicator lights.

(2) Press the push-to-talk pushbutton on this headset-microphone cord and observe that a 1,200-Hz beep is heard for approximately 2 seconds. After the 2-second period, normal sidetone should be heard, indicating that the equipment is ready for operation.

NOTE

If fading occurs during ciphered transmission and the receiving station loses synchronization, the remainder of the message will not be received even though the signal comes loud and clear for the remainder of the message. The receiving station must remain synchronized during the entire transmission period to receive a complete message.

3-31. Telephone Operation

Control of the telephone circuits is accomplished at any of the three operating positions with telephone control panels (fig. 3-6) (two are at the flight status console and one is at the supervisor's position). The telephone circuits are controlled by 15 switches numbered from 1 through 15. Note the organization to which each circuit is connected.

a. Preoperation Control Settings. When dc power is applied (para 3-27*d*), 28 volts dc is available at the audio coupler, enabling various control circuits to operate. The following switches require setting before operation.

(1) *NIGHT ALARM switch.* This switch is located on the right side of the audio coupler (fig. 3-7). When in the on (up) position, an incoming signal will cause a buzzer to operate. In addition, the respective call lamp will flash. When the NIGHT ALARM switch is in the off (down) position, an incoming call will only cause the call lamp to flash. The NIGHT ALARM switch is primarily used when the operators are away from their positions or engaged in other duties.

(2) *OPR AUDIO switch.* This switch is located on the telephone key panel. When in the ON position, audio circuits are completed to the headset or headsets ((3) below). When in the OFF position, no audio circuit can be completed through that key panel. One possible use of the OFF position is to prevent ringing in the headset while other communication is underway, or to *hold* a telephone line or conversation while reply is made to a radio call.

(3) *A or A+B switch.* This switch is located on the radio-audio control panel. In the A position, one operator at the position has full control, radio and telephone, of the position. In the A+B position, the A operator controls radio communication only the B operator controls telephone communication.

NOTE

This latter situation, under extremely heavy traffic conditions, can exist at each of the three radio-telephone operating conditions.

(4) *Telephone Key switches.* These switches should be set to the OFF position. Check each call lamp by pressing it. Each lamp should light when pressed.

b. Receive/Transmit Operation. When an incoming call is indicated either by buzzer and flashing call lamp or by flashing call lamp above, set the corresponding telephone key switch to TALK (OPR AUDIO switch must be at ON). A two-way conversation can be held with no further switch operation. When the call is ended, set the key switch to OFF.

c. Placing a Call. To place a call, press the TALK-OFF-RING telephone key switch to the RING position. When released, the switch will spring back to the center position. When the party called answers the telephone call, move the switch to the TALK position. When the call is ended, set the switch to OFF.

3-32. Initial Setting and Change of Radio Set Operating Channels and Frequencies

Frequency control of the radio sets is accomplished at the radio set controls at the radio operator's console or at the radio set itself. Initial setting, change of frequency and/or channel selection for the uhf radios, vhf radios and hf

radio are accomplished at the radio operator's console. The fm radios are set at the respective equipment.

3-33. Stopping Procedure

a. Telephone Equipment. To shut down the telephone system, set all telephone key switches to the center (OFF) position. If monitoring is desired while personnel are away from their positions, set the NIGHT ALARM switch on the audio coupler box to the on (up) position.

b. Radio Equipment. One method of stopping all the radio equipment is to set all the radio circuit breakers to OFF. Alternatively, the radios can be turned off by front panel controls (fm) or from their control units (uhf, vhf, and hf radios) as follows:

(1) *UHF radio sets.* Set the function select switch to OFF.

(2) *VHF radio sets.* Set the POWER switch to OFF.

(3) *FM radio sets.* Set the POWER switch to OFF.

(4) *HF radio sets.* Set the mode selector switch to OFF.

(5) *Secure control unit and TSEC/KY-8 equipment.* Set the KY-8 circuit breaker to OFF.

c. DC Power Source. Press the STOP (red) button on the front panel of the dc power supply. All indicator lights on the front panel of the dc power supply control box should extinguish.

d. Shelter. To shut off all shelter power, place all circuit breakers in the ac power distribution panel to OFF. Shut down the gasoline-engine driven power supply and disconnect the power plug from the shelter.

Section III. OPERATION UNDER UNUSUAL CONDITIONS

3-34. Use of ZEROIZE Switch

During emergency conditions when capture may be imminent, lift the cover of the ZEROIZE switch and set it to the up (on) position.

CAUTION

Any other operation of the ZEROIZE switch must be regulated by local security procedures.

3-35. Operation Under Emergency Conditions

a. The number of equipments and operating positions in the FCC allow considerable adaptability to any emergency situations. The prime consideration in any emergency is to keep as many of the communication channels in operation as possible. Each operator should become fully familiar with the station frequency plan and station operating procedures because this will determine the plan of action in an emergency. In general, if one or more primary communication channels fail, the operator can select one of the secondary channel radio sets and tune it to the primary communication channel. Numerous antennas of the same type are used within the system, all terminating at the antenna entrance panel; therefore, substitution may be made by interchanging coaxial connectors at this point.

b. Where a malfunction in the power system renders the power source incapable of handling the full load, equipment not in use can be temporarily shut down to reduce current drain and operation continued on only those equipment used on the primary communication channels.

c. The 28-volt dc power source has an alternate power supply (backup unit) which allows continued operation in case of failure in the operating unit. However, in case of a failure, unused equipment may be turned off to reduce current drain until the defective power source is again operating at full capacity.

d. The shelter is provided with an air conditioning unit for equipment protection and operator comfort. If this unit fails, shut down all unused equipment to reduce heat dissipation into the area. Keep necessary equipment in operation and set the blower damper control to exhaust. Use any other means of air circulation to help dissipate heat until the defect is remedied.

3-36. Recognition and Identification of Jamming

Under real or simulated tactical conditions, the receivers may be jammed by the enemy. Enemy jamming is accomplished by transmitting a strong signal on one or more of the system operating frequencies, making it difficult or impossible to hear the desired signal. Unusual noises or strong interference heard on the receivers may be attributed to enemy jamming, signals from a friendly station, noise from a local source, or a defective receiver. To determine where the interference is originating, disconnect the antenna. If the interference continues, the receiver is defective. Enemy jamming signals may be classed as continuous wave or modulated. A jamming signal may be intended to block a single frequency. This is called spot jamming. The enemy also may use one or more transmitters to jam a block or bank of frequencies. This method is referred to as barrage jamming.

a. Continuous Wave Jamming. CW jamming is transmitted as a steady carrier. This signal beats with another signal and produces a steady tone at the speaker or headset. CW jamming signals also may be keyed by using a random on and off signal or using actual code characters keyed at the same rate or a little faster than the signal being received.

b. Modulated Jamming. Modulated jamming signals may consist of noise, laughter, singing, music, various tones, or most any unusual sound, or they may be a combination of these sounds. Various types of modulated jamming signals are explained below.

(1) *Spark.* This is one of the simplest, most effective, and most easily produced jamming signals. This type signal sounds rough, raspy, and sometimes like operation

of an electric motor with sparking brushes. The signal is broad and will interfere with a large number of communication channels.

(2) *Sweepthrough.* This signal is the result of sweeping or moving a carrier back and forth across the frequency being jammed at a slow or rapid rate. The numerous signals of varying amplitude and frequency produce a sound like that of a low-flying airplane passing overhead. This type of jamming is effective over a broad range of frequencies. When it is varied rapidly, it is effective against all types of voice signals.

(3) *Stepped tones or bagpipes.* This signal usually consists of several separate tones. The tones are transmitted in the order of first increasing and then decreasing pitch, repeated over and over. The audible effect is like the sound of a Scottish bagpipe.

(4) *Noise.* Noise is random both in amplitude and frequency. It is considered one of the better types of jamming modulation. It produces a sound similar to that heard when a receiver is not tuned to a station and the volume or gain control is turned to maximum.

(5) *Gulls.* This signal consists of quick rise and slow fall of a variable audiofrequency. The sound is similar to the cry of the sea gull.

(6) *Tone.* This signal consists of a single audiofrequency of varying tone. It produces a howling of varying pitch.

3-37. Antijamming Procedures

When it is known that receiver is being jammed, the controller should alert command personnel immediately and continue to monitor the desired frequency. If the station operating plan allows, a change to another channel may be warranted. Since these antijamming steps vary depending on the receiver being used, consult the appropriate technical manual listed in appendix A for the specific details.

3-38. Activation of Smoke Alarm

WARNING

When the smoke alarm horn sounds, the smoke density in the shelter has reached a potential danger point to crew and equipment. Respond immediately to the warning signal.

At the sound of the audible horn from the smoke detector, proceed as follows:

a. Open the shelter door.

b. Shut down all equipment (para 3-33).

c. Leave the FCC.

d. Follow local procedures for fire emergency operations.

CHAPTER 4
OPERATOR'S MAINTENANCE

4-1. Scope of Operator's Maintenance

The maintenance duties of the operator are listed below together with a reference to the paragraph covering the specific maintenance function. Materials needed for maintenance are listed in paragraph 4-2.

a. Routine services (para 4-3).

b. Preventive maintenance checks and services (para 4-4).

c. Cleaning and preservation (para 4-5).

d. Repainting and refinishing (para 4-6).

4-2. Tools, Materials, and Equipment Required for Maintenance

No tools or equipment are required for operator's maintenance. The following cleaning materials will be useful to the operator.

a. Lint-free cloth.

b. Brush MIL-G-721.

c. TRICHLOROTRIFLUOROETHANE (NSN 6850-00-105-3084).

d. Vacuum cleaner.

4-3. Routine Services

Routine services are a collection of checks and observations performed by the operator at all times. Routine services are not listed in the preventive maintenance checks and services (table 4-1) in order to separate the nonoperational from the operational services. The operator should perform the following routines as necessary.

a. Cleaning.

b. Dusting.

c. Washing.

d. Check for cut or frayed cables.

e. Check to see that items not in use are properly stowed.

f. Check to see that all jacks and connectors not in use are capped with their protective covers.

g. Check for dented, bent, or broken components.

h. Check for rusting.

i. Check for loose nuts, bolts, and connectors.

j. Check to see that all nameplates are clean and legible.

k. Check shelter temperature for effectiveness of air conditioner or blowers as applicable.

l. Check clock for correct time and reset if necessary.

m. Inspect shelter skin for punctures, cracks, or open seams.

n. Check to see that power cabling is raised clear of any possible ground water. Inspect for damaged or loose connections. Cable should be free of fraying, cracks, strain and damaged connectors.

o. Check to see that antenna lead-ins are raised off the ground. Conduct an overall visual check of all antennas and supporting structures for damage and for proper tension of guy wires (if used).

p. Check to see that all ground rod connections are tight and free of dirt, rust, and corrosion.

q. Check to see that smoke detector indicator light is on.

r. Check all skids and mounting devices (if used) under power equipment and shelter for proper installation and stability or for damage.

s. Inspect weatherproofing gaskets on power equipment and shelter. Check entrance door; power, signal, and secure antenna entrance panels; tower cover; air conditioner; and hf antenna base and note that gaskets are free of paint and grease. There should be no leaks, loose edges, or signs of excessive wear.

t. Check shelter interior for completeness and general condition. Remove dirt and/or moisture from component panels and operating accessories if necessary.

u. Check operating accessory cables and cords for cuts, breaks, fraying and/or deterioration.

v. Visually check all pilot lamps and indicator lamps.

w. Check all switches, knobs, dials and indicators for improper operation, looseness or binding.

x. Check to see that a sufficient number of flight strip cards and holders are on hand.

y. Check and clean air filter, especially when the FCC is operating in dusty areas.

4-4. Preventive Maintenance Checks and Service Periods

Complete preventive maintenance is the performance of routine services (para 4-3) and preventive maintenance checks and services (PMCS) (table 4-1), to ensure that the equipment is available and ready for operation. The equipment should be checked and serviced before going into operation. If a defect is noted, refer the deficiency to a higher category of maintenance. Records and reports of these checks must be made in accordance with DA Pam 738-750.

Table 4-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE

The checks in the "Interval" column are to be performed in the order listed.

B — Before operation

Item No.	Interval B	Item to be inspected Procedure	Equipment is not ready/available if:
1	*a*	Grounding System. Check grounding system to see that it is properly installed.	Grounding System improperly installed.
2	*	Radio Set AN/ARC-115A. Perform PMCS checks as described in TM 11-5821-260-20.	Failure of final system performance check.
3	*	Radio Set AN/ARC-102. Perform PMCS checks as described in TM 11-5821-248-12.	Failure of final system performance check.
4	*	Radio Set AN/VRC-46. Perform PMCS checks as described in TM 11-5821-311-12.	Failure of final system performance check.
5	*	Radio Receiver-Transmitter RT-1167/ARC-164. Perform PMSC checks as described in TM 11-5821-311-12.	Failure of final system performance check.
6	*a*	Radio Set Antenna Systems. Check after lightning storm.	Damage due to lightning.
7	*	Control C-8156/ARC (TSEC/KY-8). Perform PMCS checks as described in TM 11-5821-281-15.	Failure of final system performance check.
8	*	Control Intercommunications Set C-1611D/AIC. Perform PMCS checks as described in TM 11-5831-201-20.	Failure of final system performance check.
9	*a*	Final system performance check. Perform operational checks as described in chapter 3, section II.	Failure of final system performance check.

*Do this check before each deployment to a mission location. This will permit any existing problems to be corrected before the mission starts. The c[illegible] does not need to be [illegible] again until redeployment.

a. Perform after deployment, before operation and as required.

4-5. Cleaning and Preservation

Inspect the interior and exterior surfaces of the shelter and the exterior surfaces of the electronic equipment. The shelter and equipment should be clean and free of dust, dirt, grease, and fungus. Clean the shelter and the equipment as follows:

a. Vacuum the floor and sprinkle enough water on the floor to prevent dust from rising and sweep the floor.

b. Remove dust and loose dirt from the walls and ceiling of the shelter and from exterior surfaces of equipment with a clean, dry, lint-free cloth and the vacuum cleaner.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

c. Remove grease, fungus, and ground-in dirt with a cloth dampened (not wet) with TRICHLOROTRIFLUOROETHANE.

d. Remove dust or dirt from plugs and jacks with the brush and/or vacuum cleaner.

e. Clean the equipment front panels, meters and control knobs with a clean, dry, lint-free cloth. If any difficulty is encountered, dampen the cloth with a solution of water and mild soap.

4-6. Repainting and Refinishing

Remove rust and corrosion from exterior metal surfaces by lightly sanding with fine sandpaper. Refer to SB 11-573 to determine the paint and preservative to use. Refer to TB 43-0118 for applicable cleaning and refinishing practices.

CHAPTER 5
ORGANIZATIONAL MAINTENANCE

Section I. GENERAL REQUIREMENTS

5-1. Scope of Organizational Maintenance

Organizational maintenance functions for the FCC are listed below with a reference to the paragraph covering the specific maintenance function.

a. Preventive maintenance checks and services (para 5-4).

b. Troubleshooting (para 5-5).

c. Replacement of parts (para 5-8).

d. Replacement of major components (para 5-8*c*).

5-2. Tools, Equipment, and Materials Required

The following tools, equipment, and material are required in addition to those listed in paragraph 4-2 for operator maintenance:

a. Tool Kit, Electronic Equipment TK-101/G.

b. Multimeter AN/URM-105.

Section II. ORGANIZATIONAL PREVENTIVE MAINTENANCE

5-3. General

a. Organizational preventive maintenance is the systematic care, inspection, and servicing of equipment to maintain it in serviceable condition, prevent breakdowns, and assure maximum operational capacity. Preventive maintenance is the responsibility of all categories of maintenance concerned with the equipment and includes the inspection, testing, and repair or replacement of parts, subassemblies, or units that inspection and testing indicate would probably fail before the next scheduled periodic service. Preventive maintenance checks and services at organizational maintenance are made at the intervals indicated in table 5-1.

b. Maintenance forms and records to be used and maintained on this equipment are specified in DA Pam 738-750.

5-4. Preventive Maintenance

Perform the maintenance functions indicated in the preventive maintenance checks and services (table 5-1). A month is defined as approximately 30 calendar days of 8-hour-per-day operation. Adjustment of the maintenance interval must be made to compensate for any unusual operating conditions. For example, if the equipment is operated 16 hours per day, the monthly preventive maintenance checks and services should be performed at 15-day intervals. Equipment maintained in a standby (ready for immediate operation) condition must have monthly preventive maintenance checks and services performed on it. Equipment in limited storage (requires service before operation) does not require monthly preventive maintenance.

Table 5-1. Organizational Preventive Maintenance Checks and Services

NOTE

The checks in the "interval" column are to be performed in the order listed.

M—Monthly

Item No.	Interval M	Item to be inspected	Procedures [a]
1	●	Fire extinguisher.	Ensure that fire extinguisher has been serviced.
2	●	First aid kit.	Ensure completeness of contents.

[a] As required.

Section III. TROUBLESHOOTING

5-5. General

The organizational troubleshooting chart supplements troubleshooting performed at the operator category. Troubleshooting is based on the operational checks in the daily preventive maintenance checks and services chart and is designed to cover the additional checks not authorized to operator maintenance, but within the capability of organizational maintenance personnel. Before troubleshooting the system, perform the following steps:

a. Check with the operator to determine what the conditions and indications were when the equipment failed.

b. Determine from the operator what steps were taken to disable (turn off) the equipment suspected of malfunction.

c. If the initial adjustments have been changed on the various components of the system, reset and adjust the component.

NOTE

In the majority of cases, assistance from direct support maintenance personnel will be required to adjust a component.

d. If the equipment has been completely shut down, using the stopping procedure (para 3-33), perform the complete starting procedure (para 3-27). During the starting procedure, follow the steps specified in table 4-1 in sequence until an abnormal condition or result is encountered. Go to the troubleshooting chart (para 5-7) and note the symptom. Step numbers progress in sequence in the troubleshooting chart and supplement the operator's PMCS chart (table 4-1). Perform the corrective action indicated in the troubleshooting chart for that item. If the malfunction is not remedied by the measures specified in the checks and corrective action column, higher category maintenance is required.

e. If only certain selected components were turned off by the operator, restart these components as described in the starting procedure in paragraph 3-27. Check for proper operation by observing the indications listed in procedure. If an abnormal condition is noted, use the troubleshooting chart as detailed in *d* above.

5-6. Sectionalization Checks

a. Many of the faults appearing in the FCC may be detected by a visual inspection of the system components.

Pilot lamps are used in most instances to indicate that power has been applied to a component. If pilot lamps fail to light, use the press-to-test feature on the lamp to insure that the lamp is good.

b. Improper setting of controls and switches could result in fault system operation. Check the control and switch settings for each type of operation used.

c. Complete failure of the system can be caused by trouble in the power source, shelter, and/or power source connections, or a faulty ac power cable assembly. Partial deenergizing of the system can be caused by faulty circuit breakers or by broken or loose wires in the ac power distribution circuit. Check the following items:

(1) Engine generators for proper power output.

(2) Power input cables for breaks or loose cable connections.

(3) Circuit breakers for positive contact.

(4) AC cords of components for breaks or improper plug seating.

d. The redundancy built into the system is a useful tool for sectionalization of trouble. When a receiving or transmitting channel is inoperable, the first step in isolating the defect would be to monitor or key the channel, as appropriate, from another operating position. If operation from the other position is normal, the defect is immediately isolated to the components peculiar to the first position. If operation is abnormal at all positions, the defect is immediately isolated to the respective receiver or transmitter, its common control circuits, or components common to all operating positions.

e. When isolating the trouble to a particular component, the starting procedure is useful to check equipment performance systematically. If the system is shut down, perform the starting procedure, checking for normal indications in each step. If the system is operational, verify the normal indication for each step. When an abnormal indication is present, perform the corrective action listed in troubleshooting chart for that particular step. If the corrective action indicated does not correct the fault, troubleshooting is required by higher category maintenance.

5-7. Organizational Troubleshooting

a. The organizational troubleshooting chart supplements the operator's PMCS (table 4-1). The chart refers to the operational check of the FCC.

b. Organizational Maintenance Troubleshooting Chart.

Item No.	Trouble symptom	Probable cause	Checks and corrective measures
1	PHASE SEQUENCE INDICATOR on ac power distribution panel does not light.	Incorrect phasing of power source.	Higher category of maintenance.
2	AC VOLTS meter or FREQUENCY meter on ac power distribution panel has incorrect or no reading.	Generator output incorrect.	Higher category of maintenance.
3	Associated indicator light on ac power distribution panel does not light.	No output on load side of circuit breaker or defective indicator lamp.	Check indicator lamp; replace if necessary. If lamp is good, refer to higher category maintenance.
4	D.C. VOLTS meter on dc power distribution panel has incorrect or no reading.	*a.* No ac power input to dc power supply.	*a.* If no ac power input, refer to higher category of maintenance.
		b. Defect in dc power supply.	*b.* Check for 28 volts dc at power supply output connections. If not present, refer to higher category maintenance.
5	Blowers do not operate.	No ac input power or blower motor shorted or open.	Check for 120 volts ac at BLOWER convenience outlet with associated BLOWER SWITCH set to ON. If not present, refer to higher category of maintenance.
6	Front panel dial indicator lamps on fm radio do not light.	Defect in fm radio.	Refer to higher category of maintenance.
7	POWER ON indicator control does not light.	No input power or defective control unit.	Refer to higher category of maintenance.
8	Panel lamps on hf control do not light.	Defect in hf control unit.	Refer to higher category of maintenance.
9	Panel lamps on fm, vhf or uhf control do not light.	Defect in fm, vhf or uhf control panel.	Refer to higher category of maintenance.
		Radio communication	
10	Unable to key a transmitter from the operating position.	Defective transmitter or transmitter control circuit.	Refer to higher category of maintenance.
11	Unable to modulate a transmitter from the operating position.	Defective transmitter or transmitter audio circuit.	Refer to higher category of maintenance.
12	No receiver audio at the operating position but radio call lamp lights.	Defective headset amplifier in radio-audio control panel.	Refer to higher category of maintenance.
13	Receiver audio is present at operating position, but radio call lamp does not light.	*a.* Defective lamp.	*a.* Test lamp, replace defective lamp.
		b. Defective printed circuit card in audio coupler.	*b.* Refer to higher category of maintenance.

Item No.	Trouble symptom	Probable cause	Checks and corrective measures
14	No receiver audio at the operating position and radio call lamp does not light.	Defective receiver or receiver audio circuit.	Refer to higher category of maintenance.
15	TUNE indicator on radio operator's console inoperative.	Defective indicator lamp.	Check lamp; replace if necessary. If lamp is good, refer to higher category of maintenance.
16	OPERATE indicator on radio operator's console inoperative.	Defective indicator lamp.	Check lamp; replace if necessary. If lamp is good, refer to higher category of maintenance.
17	SECURITY CALL indicator does not light when a received signal is present.	Defective indicator lamp or defective printed circuit board.	Check lamp; replace if necessary. If lamp is good, refer to higher category of maintenance.
18	Speaker ON-OFF switch does not effect speaker output.	Defective switch.	Refer to higher category of maintenance.
19	Unable to ring on any telephone line at all telephone control panels.	Defect in audio coupler.	Refer to higher category of maintenance.
20	Unable to ring on any telephone line at one telephone control panel.	Defect in telephone control panel.	Refer to higher category of maintenance.
21	Unable to talk on one telephone line from any telephone control panel.	Defective circuit card in audio coupler.	Refer to higher category of maintenance.
22	Unable to talk on one or more telephone lines at one telephone control panel.	Defect in telephone control panel.	Refer to higher category of maintenance.
23	Unable to receive ring (call lamp) on one telephone line at any one of the telephone control panels.	Defect in audio coupler.	Refer to higher category of maintenance.

5-8. Replacement of Parts

a. Replacement of Indicator Lamps.

(1) Remove the lens cover from the applicable indicator lamp assembly.

(2) Disengage lamp from the assembly.

(3) Insert a new lamp in the assembly.

(4) Replace the lens cover.

b. Replacement of Fuses.

(1) Set the equipment power switch to off.

(2) Remove the fuseholder cap and remove the fuse.

(3) Insert a new fuse of identical rating and replace the fuseholder cap.

(4) Set the equipment power switch to the on position.

WARNING

Always disconnect prime power before removing any components.

c. Removal and Replacement of Major Components. All major components that require removal and replacement at organization maintenance use standard mounting devices. No special techniques or tools are required for removal and replacement of these components. Remove all interunit cabling to the major component that requires removal.

NOTE

Ensure that disconnected cabling is tagged or otherwise identified to enable reconnection. Upon replacement, reconnect all interunit cabling.

APPENDIX A
REFERENCES

AR 380-40	Policy for Safeguarding and Controlling COMSEC Information (U).
AR 735-11-2	Reporting of Transportation Discrepancies in Shipment.
DA Pam 310-1	Consolidated Index of Army Publications and Blank Forms.
DA Pam 738-750	The Army Maintenance Management System (TAMMS).
SB 11-573	Painting and Preservation Supplies Available for Field Use for Electronics Command Equipment.
SB 38-100	Preservation, Packaging, Packing and Marking Materials, Supplies, and Equipment Used by the Army.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TB SIG 291	Safety Measures to be Observed When Installing and Using Whip Antenna, Field-Type Masts, Towers and Antennas and Metal Poles that are used With Communications, Radar and Direction Finder Equipment.
TM 5-4120-222-14	Operator's, Organizational, Direct Support and General Support Maintenance Manual: Air Conditioner Compact Vertical 208V, 3 phase, 18,000 BTUH Cooling, 12000 BTUH Heating (Trane models); 50/60 Hz (Model CE20VAL6) (NSN 4120-00-973-4589) and 400 Hz (Model CE20VAL4) (NSN 4120-00-858-5795).
TM 5-4520-232-14	Operator's, Organizational, Direct Support, and General Support Maintenance Manual (Including Repair Parts and Special Tools List): Heater, Space, Multifuel W/Blower; 15,000 BTU/HR, 120 V, 60 Hz, 3.5 Amp (Hunter Model UH-48, Type I) (FSN 4520-709-9222).
TM 5-6115-201-20	Operator, Organizational, Direct Support, General Support and Depot Maintenance Manual (Including Repair Parts and Special Tools List): Generator Sets, Gasoline and Diesel Engine Driven, Trailer Mounted, PU-236A/G, PU-236/G (NSN 6115-00-393-1709), PU-236B/G (6115-00-738-6334) PU-253A/U, PU-253/U (6115-00-697-2402), PU-304C/MPQ-4 (6115-00-056-8421) PU-332/G (6115-00-577-8471), PU-332A/G (6115-00-738-8336), PU-375A/G, PU-375/G (6115-00-753-2231), PU-375B/G (6115-00-931-6789), PU-401/M (6115-00-823-2217), PU-402/M (6115-00-722-3760), PU-406/M (6115-00-738-6342), PU-409/M (6115-00-702-3343), PU-409A/M (6115-00-733-6338), PU-495/G (6115-00-823-2218), PU-551/G (6115-00-889-1307), PU-564A/G (6115-00-728-6341), PU-564B/G (6115-00-179-2789), PU-617/M (6115-00-738-6335), PU-618/M (6115-00-738-6337), PU-619/M (6115-00-738-6339), PU-620/M (6115-00-738-6340), PU-625/G (6115-00-873-3915), PU-628/G (6115-00-087-0873), PU-629/G (6115-00-937-5555), PU-631/G (6115-00-059-5172, PU-656/G (6115-00-939-3296), PU-650B/G (6115-00-258-1622) and PU-656/G (6115-00-989-3296).
TM 11-5805-201-12	Operator's and Organizational Maintenance Manual: Telephone Set TA-312/PT (NSN 5805-00-543-0012).
TM 11-5805-201-20P	Organizational Maintenance Repair Parts and Special Tools Lists for Telephone Set TA-312/PT (NSN 5805-00-543-0012).
TM 11-5805-298-15	Organizational, Direct Support, General Support, and Depot Maintenance Manual: Generator, Ringing, Static, TA-248/TT and TA-248A-TT Including Repair Parts and Special Tool Lists.

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TM 11-5820-401-12	Operator's and Organizational Maintenance Manual (Including Repair Parts and Special Tools List): Radio Set AN/VRC-12 (NSN 5820-00-223-7412), AN/VRC-43 (5820-00-223-7415), AN/VRC-44 (5820-00-223-7417), AN/VRC-45 (5820-00-223-7418), AN/VRC-46 (5820-00-223-7433), AN/VRC-47 (5820-00-223-7434), AN/VRC-48 (5820-00-223-7435), AN/VRC-49 (5820-00-223-7437), AN/VRC-54 (5820-00-223-7567), AN/VRC-55 (5820-00-402-2265); Mounting MT-1029/VRC (5820-00-893-1323) and MT-1898/VRC (5820-00-893-1324); Antenna AT-912/VRC (5820-00-897-6357); Control, Frequency Selector C-2746/VRC (5820-00-892-3343) and Control, Radio Set C-2299/VRC (5820-00-892-3340).
TM 11-5820-538-12	Operator's and Organizational Maintenance Manual: Mast AB-577/GRC (NSN 5820-00-892-3862) and Extension Kit Mast MK-806/GRC (5895-00-691-2344).
TM 11-5821-248-12	Operator's and Organizational Maintenance Manual: Radio Set AN/ARC-102 (NSN 5821-00-050-8255).
TM 11-5821-248-20P	Organizational Repair Parts and Special Tool List, Radio Set AN/ARC-102 (NSN 5821-00-050-8255).
TM 11-5821-260-20	Organizational Maintenance Manual, Radio Set AN/ARC-115A.
TM 11-5821-260-20P	Organizational Maintenance Repair Parts and Special Tools Lists: Transmitters, Radio T-417/GR and T-417A/GR, FSN 5820-503-3305.
* TM 11-5821-281-15	KY-8 Control, Instruction Manual, Control Indicator C-8156/ARC.
TM 11-5821-311-12	Operator's and Organizational Maintenance Manual for Receiver-Transmitter, Radio RT-1167/ARC-164(V) (NSN 5821-00-138-7990).
TM 11-5821-311-20P	Organizational Repair Parts and Special Tools List for Receiver-Transmitter RT-1167/ARC-164 (NSN 5815-00-011-3889).
TM 11-5831-201-20	Organizational Maintenance Manual: Control Intercommunication Set, C-1611D/AIC and Discriminator, Discrete Signal MD-736/A.
TM 11-5985-262-15	Operator's, Organizational, Direct Support, General Support and Depot Maintenance Manual: Antenna AS-1729/VRC (NSN 5985-00-985-9024).
TM 11-5985-326-20	Organizational Maintenance Manual: Coupler, Antenna CU-1658/A and CU-1669/GRC.
TM 740-90-1	Administrative Storage of Equipment.

* This manual is not available through AG publication channels but may be obtained by writing to Commander, CECOM, ATTN: AMSEL-ME-MP, Fort Monmouth, NJ 07703-5007.

APPENDIX B
COMPONENTS OF END ITEM LIST

Section I. INTRODUCTION

B-1. Scope

This appendix lists integral components of and basic issue items for the AN/TSC-61B to help you inventory items required for safe and efficient operation.

B-2. General

This Components of End Item List is divided into the following sections:

a. Section II. Integral Components of the End Item. These items, when assembled, comprise the FCC and must accompany it whenever it is transferred or turned in. The illustrations will help you identify these items.

b. Section III. Basic Issue Items. These are the minimum essential items required to place the FCC in operation, to operate it, and to perform emergency repairs. Although shipped separately packed they must accompany the FCC during operation and whenever it is transferred between accountable officers. The illustrations will assist you with hard-to-identify items. This manual is your authority to requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. Explanation of Columns

a. Illustration. This column is divided as follows:

(1) *Figure number.* Indicates the figure number of the illustration on which the item is shown.

(2) *Item number.* The number used to identify item called out in the illustration.

b. National Stock Number. Indicates the National stock number assigned to the item and which will be used for requisitioning.

c. Part Number. Indicates the primary number used by the manufacturer, which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards, and inspection requirements to identify an item or range of items. Following the part number, the Federal Supply Code for Manufacturers (FSCM) is shown in parenthese.

d. Description. Indicates the Federal item name and, if required, a minimum description to identify the item.

e. Location. The physical location of each item listed is given in this column. The lists are designed to inventory all items in one area of the major item before moving on to an adjacent area.

f. Usable on Code. Not applicable.

g. Quantity Required (Qty Reqd). This column lists the quantity of each item required for a complete major item.

h. Quantity. This column is left blank for use during an inventory. Under the Rcvd column, list the quantity you actually receive on your major item. The Date columns are for your use when you inventory the major item at a later date; such as for shipment to another site.

B-4. Special Information

National stock numbers that are missing from section II have been applied for and will be added to this TM by future change/revision when they are entered in the Army Master Data File (AMDF). Until the NSN's are established and published, submit exception requisitions to: Commander, US Army Communications-Electronics Command and Fort Monmouth, ATTN: DRSEL-ME-MM, Fort Monmouth, NJ 07703 for the item required.

SECTION II INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
1-2		5411-01-058-6292	SHELTER, ELECTRONIC EQUIPMENT S-594/TSC-61B			1		
1-2		4120-01-094-5650	AIR CONDITIONER MIL-A-52767			1		
1-9		4520-01-069-6959	HEATER MIL-H-52204-1			1		
3-19			DETECTOR, SMOKE SC-D-881481			1		
1-7		6645-00-224-8630	CLOCK, TYPE B MIL-C-1194-B			1		
3-2			POWER SUPPLY PP-7442/G			2		
3-3		5895-01-058-6324	CONTROL, POWER SUPPLY C-10419/TSC-61B			1		
1-5			SPEAKER ASSEMBLY SC-D-934607 (LS-454/U MODIFIED)			1		
1-5		5895-01-073-5486	SPEAKER ASSEMBLY SC-D-934608 (LS-454/U MODIFIED)			3		
1-13		5395-01-073-9025	COUPLER, AF SC-D-881184			1		
1-14		5895-01-073-1469	CIRCUIT CARD, RADIO CONTROL SC-D-881972			12		
1-14		5895-01-072-4672	CIRCUIT CARD, TELEPHONE CONTROL SC-D-881970			18		
1-14		5895-01-073-0147	CIRCUIT CARD, BUZZER-FLASHER SC-D-881974			2		
1-5		5820-00-892-0622	RECEIVER-TRANSMITTER RT-524A/VRC			3		
1-5		5820-00-893-1323	MOUNTING MT-1029/VRC			3		
1-16		5985-00-985-9024	ANTENNA AS-1729			3		
1-22			TRIPOD, ANTENNA AB-1256/GRC			2		
2-5		5985-01-099-7180	TRIPOD ADAPTER ASSEMBLY SC-D-881810			2		
2-5			GUY ASSEMBLY SM-D-493216			2		
2-5			CLAMP, ELECTRICAL SC-C-14204			2		
2-5		5820-00-227-7168	MAST SECTION SC-D-1155			13		
2-5		4030-00-580-7833	ANCHOR, SCREW POINT SM-B-423652			2		
1-5		5895-01-082-3794	RECEIVER-TRANSMITTER RT-1167/ARC-164			3		
2-3		5895-01-061-6941	ANTENNA AS-3243/GRC			1		
2-3		5895-01-063-1474	ANTENNA AS-3244/TS			1		
1-5		5915-01-025-9642	FILTER, BAND PASS F-1451/GRC			3		
1-5		5915-01-058-7700	FILTER, BAND PASS F-1463/GRC			3		

SECTION II INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
1-5		5821-00-604-3307	RECEIVER-TRANSMITTER RT-698/ARC-102			1		
1-5			CONTROL, RADIO SET C-3940/ARC-94			1		
1-5			POWER SUPPLY MOUNTING PP-7069/TSC			1		
2-7		5985-00-167-7898	ANTENNA COUPLER CU-1658A/A			2		
2-7		5985-01-058-1078	CASE, COUPLER CY-7658/GRC			1		
1-18			ANTENNA AT-1011/U			1		
2-7		5985-00-733-6042	ELEMENT, ANTENNA AT-1039/U			1		
2-7		5985-00-733-6043	ELEMENT, ANTENNA AT-1040/U			1		
2-7		5985-00-733-6044	ELEMENT, ANTENNA AT-1041/U			1		
2-7		5985-00-733-6045	ELEMENT, ANTENNA AT-1042/U			1		
2-7		5985-00-733-6046	ELEMENT, ANTENNA AT-1043/U			4		
1-5		5831-00-682-2703	CONTROL, INTERCOMMUNICATION SET C-1611D/AIC			1		
1-5		5895-01-058-6315	PANEL, CONTROL INDICATOR C-10418/TS			3		
1-5		5895-01-058-6314	PANEL, CONTROL INDICATOR C-10417/TS			3		
1-5		5805-00-503-1482	GENERATOR, RINGING TA-248A/TT			1		
1-5		5965-00-755-4656	HEADSET-MICROPHONE H-157/AIC			6		
1-5			FOOTSWITCH ASSEMBLY SC-D-934451			1		
1-5		5895-01-075-0058	FOOTSWITCH ASSEMBLY SC-D-881997			1		
1-5		5895-01-074-2704	FOOTSWITCH ASSEMBLY SC-D-881998			1		
1-5		5805-00-543-0012	TELEPHONE, FIELD TA-312/PT			1		
2-8		5820-00-892-3862	MAST, ANTENNA AB-577/GRC			1		
1-5		5820-00-926-7229	CONTROL, INDICATOR C-8156/ARC			1		
1-5		5895-01-058-7456	AMPLIFIER-FILTER AM-6985/TS			1		
2-3			LADDER SC-D-108737			1		
2-8		5820-00-856-9924	ANTENNA SUPPORT ASSEMBLY AB-720/G			1		
1-5			MOUNTING MT-3874/U			1		
1-2			CAN, GASOLINE TA13219E2670 PER MIL-C-1283			1		

SECTION II INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
1-5			FLIGHT STRIP SC-C-889873			1		
1-5			KEY ASSEMBLY SC-B-889813			1		
1-5			FILTER, LOW PASS SC-D-881524			2		
1-5			FILTER, BAND PASS SC-D-881525			3		
1-5			BRACKET SC-B-881257			1		
2-7			ANTENNA COUPLER KIT (LONG WIRE ADAPTER) SC-C-934694			2		
1-5		7520-00-159-4863	BASKET, WASTEPAPER SC-D-539454			1		
1-5			BRACKET, LANTERN SC-B-539428			2		
2-7			GROUND ROD ASSEMBLY SC-C-889622			2		
1-5			GUARD, SCREEN 47662			1		
2-5			GUY, ASSEMBLY, LOWER SM-D-493216			1		
1-4			HOSE ASSEMBLY, EXH SC-D-889801			1		
1-5			JUNCTION BOX ASSEMBLY SC-D-881070			1		
1-5			MATT, RUBBER SC-B-934466			1		
1-5			ROD, GROUND SC-D-14158			2		
2-5		4030-00-580-7833	SCREW POINT, ANCHOR SM-B-423652			2		
2-7		6150-00-495-1214	STRAP, GROUND ROD SC-B-539492			2		
1-5			STRAP, MOUNTING SC-C-881358			1		
1-5			STRIPHOLDER, FLIGHT SC-D-881466			88		
2-7			GROUND STRAP SC-C-889623			2		
2-8			ADAPTER, ANTENNA SC-D-881835			1		
2-8			ANTENNA, SUPPORT SC-D-889536			1		
1-16			MOUNT ASSEMBLY SC-D-889535			2		
2-8			ADAPTER ASSEMBLY SC-D-881815			1		
2-5			ADAPTER, TRIPOD SC-D-881810			2		
			CABLE ASSEMBLY, RF HF SC-D-881918			2		
			CABLE ASSEMBLY, RF F. SC-D-881917			1		

SECTION II INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
			CABLE ASSEMBLY, RF FM SC-D-881914			1		
			CABLE ASSEMBLY, RF FM SC-D-882013			1		
			CABLE ASSEMBLY, RF FM SC-D-8C1913			1		
			CABLE ASSEMBLY, RF VUV SC-D-881915			1		
			CABLE ASSEMBLY, RF VUV SC-D-882007			1		
			CABLE ASSEMBLY, RF VUV SC-D-882008			1		
			CABLE ASSEMBLY, RF UVU SC-D-881916			1		
			CABLE ASSEMBLY, RF UVU SC-D-882009			1		
			CABLE ASSEMBLY, RF UVU SC-D-882010			1		
			CABLE ASSEMBLY, RF UVU SC-D-881912			1		
			CABLE ASSEMBLY, RF UVU SC-D-882012			1		
			CABLE ASSEMBLY, RF FM SC-D-881908			1		
			CABLE ASSEMBLY, RF FM SC-D-881906			1		
			CABLE ASSEMBLY, RF FM SC-D-882014			1		
			CABLE ASSEMBLY, RF FM SC-D-881907			1		
			CABLE ASSEMBLY, AIR CONDITIONER SC-D-889445			1		
			CABLE ASSEMBLY, GENERATOR SC-D-889664			1		
			CABLE ASSEMBLY, GENERATOR SC-D-889665			1		
			CABLE ASSEMBLY, UHF-3RF SC-D-934560			1		
			CABLE ASSEMBLY, UHF-2RF SC-D-881920			1		
			CABLE ASSEMBLY, UHF-1RF SC-D-934561			1		
			CABLE ASSEMBLY, AN/ARC-164 SC-D-881922			1		
			CABLE ASSEMBLY, UHF-1RF SC-D-934562			1		
			CABLE ASSEMBLY, UHF-1RF SC-D-881924			1		
			PATCH CORD SC-D-934628			1		
			PATCH CORD SC-D-934629			1		
1-16		5985-00-985-9024	ANTENNA AS-1729			1		

SECTION II INTEGRAL COMPONENTS OF END ITEM

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
2-5		5985-00-985-9022	ANTENNA ELEMENT AS-1730/VRC			1		
2-5		5820-00-856-2728	ANTENNA ELEMENT AT-1095/VRC			1		
2-5		5985-00-985-9024	MATCHING UNIT-BASE, ANTENNA MX-6707/VRC			1		
2-9			CONTROL CABLE 50 FT SC-D-881914			1		

SECTION III BASIC ISSUE ITEMS

(1) ILLUSTRATION (A) FIG NO.	(1) ILLUSTRATION (B) ITEM NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION PART NUMBER (FSCM)	(4) LOCATION	(5) USABLE ON CODE	(6) QTY REQD	(7) QUANTITY RCVD	(7) QUANTITY DATE
2-4			DIGGING BAR SM-B-423624			1		
1-2		5340-00-682-1508	PADLOCK AND KEYS MS35647-3			1		
1-5			ROD ASSEMBLY SC-C-934452			2		
1-5			AXE SC-D-539451			1		
1-5			BRUSH, DUST SC-C-539469			1		
1-5			CHAIR, ROTARY SC-D-539552			3		
2-3		4210-00-270-4512	FIRE EXTINGUISHER SC-D-539482			2		
1-5			FIRST AID KIT SC-D-539483			1		
2-3		5920-00-280-8342	FUSE, CARTRIDGE F02A250V1A			5		
3-5		5920-00-280-4960	FUSE, CARTRIDGE F02A250V2A			5		
3-5			FUSE, CARTRIDGE F02A250V3A			5		
1-5			HAMMER, SLEDGE SC-C-539505			1		
1-5		6240-00-763-7744	LAMP, INCANDESCENT MS25237-387			5		
1-5		6240-00-155-8653	LAMP, INCANDESCENT SC-C-681179			3		
1-5		6240-00-152-2996	LAMP, FLUORESCENT SC-C-539495			4		
1-5			LANTERN SC-C-539491			2		
1-5		6230-00-115-2687	LIGHT, EXTENSION SC-C-539496			1		
2-3			REEL, CABLE RC-405			1		
2-3			REEL, CABLE RC-435			2		
1-5			ROD, RETAINER SC-C-881144			16		
1-5			ROD, THREADED SC-C-934644			1		
1-5		5120-00-222-8852	SCREWDRIVER, FLAT SC-C-539502-4			1		
1-5		5120-00-060-2004	SCREWDRIVER, PHILLIPS SC-C-539894-3			1		
1-5			STARTER, FLUORESCENT SC-B-539504			4		
1-5		7910-00-900-1678	VACUUM CLEANER 2800			1		
2-4			STORAGE BOX KIT SC-D-889537			1		
2-3			STORAGE BOX ASSEMBLY SC-D-881367			1		

APPENDIX C
ADDITIONAL AUTHORIZATION LIST

Section I. INTRODUCTION

C-1. Scope
This appendix lists additional items you are authorized for the support of the FCC.

C-2. General
This list identifies items that do not have to accompany the FCC and that do not have to be turned in with it. These items are all authorized to you by CTA, MTOE, TDA, or JTA.

C-3. Explanation of Listing
National stock numbers, descriptions, and quantities are provided to help you identify and request the additional items you require to support this equipment.

C-4. Special Information
National stock numbers that are missing from section II have been applied for and will be added to this TM by future change/revision when they are entered in the Army Master Data File (AMDF). Until the NSN's are established and published, submit exception requisitions to Commander, US Army Communications-Electronics Command and Fort Monmouth, AMSEL-ME-MP, Fort Monmouth, NJ 07703-5007, for the item required.

SECTION II ADDITIONAL AUTHORIZATION LIST

(1) NATIONAL STOCK NUMBER	(2) DESCRIPTION PART NUMBER AND FSCM USABLE ON CODE	(3) UNIT OF MEAS	(4) QTY AUTH
0052-00-806-2000	FLIGHT STRIPS SC-C-889873	BOX (2000)	1
7930-00-395-9542	TRICHLOROTRIFLUOROETHANE	QT	1
NONE	BRUSH MIL-G-7241	EA	1
6115-00-738-8342	GENERATOR SET, PU-406/M TRAILER	EA	2

APPENDIX D
MAINTENANCE ALLOCATION

Section I. INTRODUCTION

D-1. General

This appendix provides a summary of the maintenance operations for AN/TSC-61B. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

D-2. Maintenance Function

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition; i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of materiel maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

D-3. Column Entries

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C—Operator/Crew
O—Organizational
F—Direct Support

H—General Support
D—Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

D-4. Tool and Test Equipment Requirements (Sec III)

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

D-5. Remarks (Sec IV)

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

D-6. Special Information

National stock numbers that are missing from section II have been applied for and will be added to this TM by future change/revision when they are entered in the Army Master Data File (AMDF). Until the NSN's are established and published, submit exception requisitions to Commander, US Army Communications and Electronics Materiel Readiness Command, DRSEL-ME-MQ, Fort Monmouth, NJ 07703, for the item required.

SECTION II MAINTENANCE ALLOCATION CHART FOR FLIGHT COORDINATION CENTRAL AN/TSC-61B

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQPT.	(6) REMARKS
00	FLIGHT COORDINATION CENTRAL AN/TSC-61B	Inspect	0.5						AA
		Install	4.0	4.0					A
		Test	0.5						
		Repair			1.5			1 thru 5, 7 thru 9, 12	B,C
01	SHELTER, ELECTRICAL EQUIPMENT S-594/TSC-61B	Inspect	0.3						
		Service	0.5						
		Repair			3.0			1,2,3	B,C
0101	ENVIRONMENTAL CONTROL SUBSYSTEMS	Inspect	0.3						
		Test	0.3						A
		Repair			2.0			1	B
010101	AIR CONDITIONER MODEL CE20VAL6								D
010102	GASOLINE HEATER MODEL MH-1583E-1								E
	THERMOSTAT	Inspect	0.1						
		Service	0.1						
		Test	0.5						A
		Replace			0.5			1	V
	FAN, CIRCULATING	Inspect	0.1						
		Service	0.1						
		Replace			1.0			1	V
	BLOWER ASSEMBLY	Inspect	0.1						
		Service	0.1						
		Replace			1.0			1	V
	ALARM, SMOKE AND FIRE	Inspect	0.1						
		Service	0.1						
		Test	0.1						A
		Replace			0.5			1	V
	CLOCK, 8-DAY	Inspect	0.1						
		Service	0.1						
		Test	0.1						A
		Replace			0.5			1	V
0102	AC POWER ENTRANCE PANEL	Inspect	0.1						
		Test		0.5				6,10	
		Repair			1.0			1,2,3	C
0105	AC POWER CIRCUIT BREAKER BOX	Inspect	0.1						
		Test		0.5				6,10	
		Repair			1.8			1,2,3	C
0106	ANTENNA ENTRANCE PANEL	Inspect	0.1						
		Test		0.5				6,10	
		Repair			1.0			1,2,3	C
0107	TELEPHONE ENTRANCE PANEL	Inspect	0.1						
		Test		0.5				6,10	
		Repair			1.0			1,2,3	C
02	DC POWER SUBSYSTEM	Inspect	0.3						
		Test	0.3						A
		Repair			1.0			1	B
0201	POWER SUPPLY PP-7442/G								F
0202	RADIO CIRCUIT BREAKER BOX	Inspect	0.1						
		Test		0.5				2	
		Repair			1.0			1,2	C
0203	CONTROL, POWER SUPPLY C-10419/TSC-61B	Inspect	0.1						
		Test		0.5				2	
		Repair			1.0			1,2	C

SECTION II MAINTENANCE ALLOCATION CHART
FOR
FLIGHT COORDINATION CENTRAL AN/TSC-61B - Continued

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQPT.	(6) REMARKS
03	LOUDSPEAKER LS-454/U	Inspect Service Test Repair	0.1 0.1 0.1		1.5			1 thru 4,7	A
04	SIGNAL CONTROL BOX	Inspect Repair	0.1		3.5			1 thru 4,7	C
0401	RADIO CONTROL PCB	Repair				L 1.5		1 thru 4,7,11	BB
0402	TELEPHONE CONTROL PCB	Repair				L 1.5		1 thru 4,7,11	BB
0403	BUZZER-FLASHER PCB	Repair				L 1.5		1 thru 4,7,11	BB
05	RADIO SUBSYSTEMS	Inspect Test Repair	0.5 0.5		1.0			1	A B H
0501	RADIO SET AN/VRC-46								I
050101	ANTENNA AS-1729/VRC								
050102	TRIPOD, ANTENNA AB-1256/GRC	Inspect Service Repair	0.1 0.1		1.0			6	J
0502	RECEIVER-TRANSMITTER RT-1167/ARC-164(V)								
050201	NOT USED								
050202	FILTER, BANDPASS F-1463/GRC	Inspect Service Test Replace	0.1 0.1 0.2		0.5			1	A L
050203	ANTENNA AS-3243/GRC	Inspect Service Replace	0.2 0.1		0.5				L M
0503	RADIO SET AN/ARC-115								
050301	ANTENNA AS-3244/TS	Inspect Service Replace	0.2 0.1		0.5			1	L
050302	FILTER, BANDPASS F-1451/GRC	Inspect Service Test Replace	0.1 0.1 0.2		0.5			1	A L N
0504	RADIO SET AN/ARC-102								O
050401	CONTROL C-3940/ARC-94								D
050402	POWER SUPPLY-MOUNTING PP-7069/TSC-61								P
050403	ANTENNA COUPLER CU-1658A/A								
050404	CASE, ANTENNA COUPLER CY-7658/GRC	Inspect Test Repair	0.1	0.1	0.5			10 1	Q
050405	ANTENNA AT-1011/U								

SECTION II MAINTENANCE ALLOCATION CHART FOR

FLIGHT COORDINATION CENTRAL AN/TSC-61B - Continued

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY C	O	F	H	D	(5) TOOLS AND EQPT.	(6) REMARKS
06	SUPERVISOR'S CONSOLE	Inspect	0.1						
		Service	0.2						A
		Test	0.5						B
		Repair			0.5			1	
0601	PANEL, CONTROL INDICATOR C-10418/TS	Inspect	0.1						
		Test	0.2						A
		Repair		0.2				1	Y
		Repair			2.0			1 thru 4,7	S
0602	PANEL, CONTROL INDICATOR C-10417/TS	Inspect	0.1						
		Test	0.2						A
		Repair		0.2				1	Y
		Repair			1.2			1 thru 4,7,11	T
060201	HEADSET AMPLIFIER PCB C-1611D/AIC, A2								R
060202	MICROPHONE PREAMPLIFIER PCB C-1611D/AIC, A3								R
060203	MICROPHONE AMPLIFIER PCB C-1611D/AIC, A4								R
060204	AUDIO RELAY BOARD	Replace			0.5			6	V
07	OPERATOR'S CONSOLE	Inspect	0.2						
		Service	0.2						A
		Test	0.5						B
		Repair			0.5			1	
0701	PANEL, CONTROL INDICATOR C-10418/TS	Inspect	0.1						
		Test	0.2						A
		Repair		0.2					Y
		Repair			2.0			1 thru 4,7	S
0702	PANEL, CONTROL INDICATOR C-10417/TS	Inspect	0.1						
		Test	0.2						A
		Repair		0.2				1	Y
		Repair			1.2			1 thru 4,7,11	T
08	GENERATOR, RINGING TA-248A/TT								U
09	HEADSET-MICROPHONE H-157/U								V
10	FOOTSWITCH	Inspect	0.1						
		Service	0.1						A
		Test	0.1						
		Replace			0.1			1	
11	TELEPHONE, FIELD TA-312/PT								W
12	MAST, ANTENNA AB-577/GRC								X
13	SPEECH SECURITY SUBSYSTEM	Inspect	0.1						
		Test	0.2						A
		Repair			0.5			1	B
1301	MOUNTING MT-3874/V	Repair			0.5			1	
1302	CONTROL C-8156/ARC								Z
1303	AMPLIFIER-FILTER AM-6985/TS	Inspect	0.1						
		Repair			1.5			1 thru 4,7	C
	CALL LIGHT PCB	Test			0.2				
		Replace			0.5			1 thru 4,7,11	V
	PREAMPLIFIER PCB	Test			0.2				
		Replace			0.5			1 thru 4,7,11	V
14	HEADSET-MICROPHONE H-133C/AIC								G

SECTION III TOOL AND TEST EQUIPMENT REQUIREMENTS FOR FLIGHT COORDINATION CENTRAL AN/TSC-61B

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	F,L	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/G	5180-00-605-0079	
2	F,L	MULTIMETER AN/USM-223	6625-00-999-7465	
3	F,L	ELECTRONIC VOLTMETER ME-30A/U	6625-00-643-1670	
4	F,L	OSCILLOSCOPE AN/USM-281A	6625-00-224-2201	
5	F	OHMMETER ZM-21B/U	6625-00-581-2466	
6	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-00-064-5178	
7	F,L	AUDIO OSCILLATOR AN/URM-127	6625-00-783-5965	
8	F	DUMMY LOAD DA-75/U	6625-00-177-1639	
9	F	WATTMETER AN/URM-120	6625-00-813-8430	
10	O	MULTIMETER AN/URM-105	6625-00-999-6282	
11	F,L	TEST SET, TRANSISTOR TS-1836/U	6625-00-893-2628	
12	F	COUNTER, ELECTRONIC DIGITAL READOUT AN/USM-207A	6625-00-044-3328	

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☆ U. S. GOVERNMENT PRINTING OFFICE : 1990 0 - 262-912 (30576)

By Order of the Secretary of the Army:

E. C. MEYER
General, United States Army
Chief of Staff

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ARNG: None.
USAR: None.
For explanation of abbreviations used, see AR 310-50.